

FOR ACOUSTIC COUPLERS
TEL: 01 403 4803

Computer Weekly

Thursday, August 19, 1982

Price war threat as micro stocks pile up

by Kevin Cahill
A MAJOR price war is threatening high street micro vendors as stocks pile up in distributors' warehouses.

Already Apple has cut £300 off the price of the Apple II in a bid to stimulate sales, and Tandy has followed with a £200 drop on the TRS80.

But distributor-led price cuts are likely to be rapidly exceeded by the dealers themselves as they fight for a bigger slice of the market.

At a recent seminar, former Apple European vice-president Tom Lawrence gave figures which showed European sales of micros generally rising by over 68% in value between 1981 and 1982.

The figures showed sales in 1981 at £380 million, rising to £640 million

for the whole of 1982, with Apple increasing its share of the European market from 26% in 1981 to 29% in 1982.

These percentage figures mean that Apple's European revenues have risen from \$98.8 million in 1981, to \$185.6 million for 1982.

The departure of Lawrence, following hard on the heels of the company's manufacturing director in Cork, Alec Wrafter, has been accompanied by suggestions that these targets are not being met.

"The current recession is sorting the men from the boys, but we are confident that the strategy we have developed will give us a good market share," he added.

In the South-west, Don Martin of Exebridge Business Systems says that the last two months have been very quiet.

But Apple is far from being the only company beguiled into over-commitment by over-optimistic sales forecasts, and companies are now battling for market share.

At a recent seminar, former Apple European vice-president Tom Lawrence gave figures which showed European sales of micros generally rising by over 68% in value between 1981 and 1982.

The figures showed sales in 1981 at £380 million, rising to £640 million



Acceptance of the Sirius I seen as a boost for the machine.

Computer scoops govt with Finance Act text

by Kevan Pearson
A COMPUTER-based legal information system has beaten the government's official communications channel to the market with a full text version of the 1982 Finance Act.

Lexis, a legal search and retrieval system, had its up-to-date version of the Act, which details the legislative changes made in the Budget, available to subscribers exactly a week after it became law on July 30.

Not even Her Majesty's Stationery Office, HMSO, which publishes all UK legislation and government reports, could match this.

The Finance Act is the legal form of the Budget, given to Parliament by the Chancellor of the

Exchequer Sir Geoffrey Howe, in April. However, between April

and the granting of the Royal Assent, the Finance Act underwent many changes. Lexis had to keep fully informed of the Act and its passage through Parliament, in order to put the version out before the HMSO's official version.

Lexis is a subscription only, dedicated service covering all legal cases, and UK legislation. It is based on two Amdahl computers located in Ohio. The computers are also used to provide a similar, but much larger service to the US and a third specially built Amdahl is shortly to be added to the installation.

According to Kyle Bosworth, who manages Lexis in the UK, the system takes only 16 seconds to calculate the number of times a particular word is used in the 48,000 reported cases in the Gen-

eral English system.

The system has over 2,000 trained users in the UK.

Cost of using the system are £250 monthly subscription, with an online use charge of £1.20 a minute and £18 an hour search fee.

Currys has a careful approach to

picking micros to add to its range, and has rejected more than three-quarters of the machines it has tested. The Sirius hardware was fine – "I don't hear the engineers complaining about it," says commercial director Derrick Clarke – and Currys has already shipped more than 20 machines.

But these have been mainly to "computer people", who will write their own software. "I am short of software packages for the Sirius," Clarke says, and he feels this might hit sales to businesses wanting packaged solutions to business problems.

The main stumbling block at present is the accounting packages. Currys has gone with Syntex.

Political hitch delays plans for London 'technopark'

by Nicholas Enteknap
THE Prudential Assurance Company's plans for a "technopark" in South London have struck a political hitch.

The new Southwark Borough Council, elected in May with a mandate to provide more family housing, has rejected the plans accepted by the previous Council and is putting forward alternative plans of its own.

The idea for the technopark was jointly developed by the Pru and the South Bank Polytechnic. The idea is for a three-storey, 50,000 square foot building housing some 70 start-up companies specialising in high technology products.

The building would physically adjoin the Polytechnic, thus providing the companies with

access to the Polytechnic facilities, including in particular expertise in the formulation of business plans and access to venture capital.

The space was available, as there is a derelict bomb site bounded on three sides by Polytechnic buildings and on the fourth side by the London road. This area is officially zoned for housing, however, so permission had to be obtained from the local council, the GLC and the Department of the Environment.

The process took about a year, during which the change of council took place. The Prudential is angry about the Council's change of mind, pointing out that "the project has involved us in almost a year's detailed outline planning, plus management time."

The losses emerged at the end of one of the company's heavier investment periods, according to chairman Philip Rule.

"Last year we invested substantially in creating the MicroCobol

version of Safe's production

control package, along with investment in the new Safe package for

TERMINAL CHOICE DECWRITER III

180 cps
bi-directional
keyboard printer
with variable
character widths,
1d margins, tabs
and forms set from
a keyboard.

£1399

RAIR 01-836 6921

Printed in Great Britain by QB Limited, Sheppen Place,
and published by IPC Electrical-Electronic Press Ltd, Quadrant,
Sutton, Surrey SM2 5AS.

AutoGraph RANGE

High performance editing graphics for around £1250

- Features 512 x 256 plotting resolution
- Links with graphics printer to provide complete low cost "graphics workstation"
- Fully software compatible with Tektronix 4010/4012 and 4013
- Graphics Hardware Cursor, emulating the 4010 range
- Can operate as either full feature Teletype alpha numeric terminal or as graphics terminal

Autograph from Data Type

Autograph is a trademark of Tektronix Inc.

National Sales Office
Data Type Limited
Unit 213, Springfield Industrial Estate,
Orchard Way, Cwmbran, Gwent
WA5 4TY
Tel: 093 23 61812. Tel: 093 277712
Telex: 801030

Computer financing
Strandbrook House, 2-5 Old Bond Street, London W1X 3TB
AVAILABLE
30/83 J 24
AUGUST 1983
RAIR 01-836 6921
6-8 Upper St. Martin's Lane, London WC2

TELEPHONE: 01 409 2388. TELEX: 8954724

Dysan DISKETTES
5 1/4" 8
The ultimate media choice
from Comart
For Industrial & Executive Solutions
Tel: 01 400 1215/005. Tel: 01 374 0000
Fax: 01 400 1215/005. Tel: 01 374 0000

'82 A great year
for PETZ
5 THINGS
ADVANCED
FEATURES
TERMINAL FOR
ICL/IBM
FERRANTI
Computer Systems



17



17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

17

It's hard at home — soft in East for ACT

by Robert Parry and Boris Sedlacek
BIRMINGHAM-BASED systems house ACT last week found itself with a hardware battle at home as it pulled off a major software deal in Hong Kong.

And both situations revolve around the company's sales of a US-made computer, the Sirius 1.

ACT's Hong Kong deal is straightforward. It is to supply software for the Sirius machine to Swire Systems for sale in the Colony.

But in the UK the company finds itself under attack in the market for the Sirius that it started only last November due to a misunderstanding of distribution rights.

From next month two versions of the US-built Sirius 1 16-bit micro will be available in the UK: the ACT Sirius 1 from the established distributor ACT, and the Victor 9000 from DRG Business Machines based in Weston-Super-Mare.

There is no difference between the machines save the packaging. For a dark box go to ACT, for a light one try DRG.

The ACT group has been selling the Sirius here since November last year. It set up a separate company, ACT (Sirius), to handle the product and has a network of about 270 dealers.

DRG has 35 dealers already carrying the Cado microcomputer, and will be using these as the kernel of an expanded dealer network for the Victor 9000.

Until recently ACT believed that it had exclusive distribution rights for the machine in the UK, just as Victor Business Products, Chicago-based offshoot of US industrial conglomerate Walter Kidde, held exclusive rights in the US.

But it turns out that part of the



POSTER... "We don't see it as a threat."

deal with Victor, which played a large part in funding Sirius Technology Systems, was that Victor had distribution rights in the rest of the world too.

"We would much prefer they weren't coming over here," says ACT's group managing director Roger Foster, "but we don't see it as a threat." He reckons ACT will get new products from Sirius sooner than DRG can via Victor, and that DRG's margins on the machine will be smaller because of the three-link chain, giving ACT more scope on prices.

This view is not shared by DRG's managing director, Michael Kilmartin. "It's way out," he says, pointing out that Victor owns a large chunk of Sirius. He is pricing the Victor 9000

Recession hits the U mainframe makers

by Kevan Pearson

THE European computer market underwent a dramatic reversal in 1981 as the profits of the UK mainframe manufacturers came crashing following the depth of the recession and the rise of the dollar on the international exchanges.

The recession caused problems for the home-grown European computer industry too. ICL, Siemens and CII-Honeywell Bull have the same problems currently afflicting Burroughs, NCR and Honeywell: falling demand for large and expensive mainframe computers.

Even the might of IBM, still in first place, was humbled with a fall in sales.

The star in the massed American ranks is predictably, Digital Equipment, which grew in Europe in the last financial year by 38%, compared with a 6% downturn in sales for IBM.

Honeywell wins big Scots office project

by Andrew Thomas

SCOTLAND'S first large-scale office automation project has been given the go-ahead by Strathclyde Regional Council. Honeywell DPS 6 minicomputers will provide the authority's 115,000 employees with word processing and electronic mail facilities, and the system is to be implemented in conjunction with the Department of Education for ACT software in the Far East.

But Swire Systems, the new company, will not be getting its Sirius machines from ACT. ACT has not put up any equity capital in Swire Systems but has an option to purchase 25% in the future "at an attractive price", according to chairman Lindsay Bury.

ACT will provide the management and know-how about marketing Sirius.

On the UK side ICL passed the post with a 5% sales drop, less than expected, and boding well for the future. But the real performer on the UK side must be Ferranti Computer Systems which, despite the dire economic straits of the UK economy, managed to show growth of 29%, against Plessey's estimated growth of under 10%.

But General Electric Company, which had a record year again, not figure at all in the top 25 European computer companies. Its computer systems division is rumoured to be in difficulties, though its 4000 series machines are said to be very good products. They have the misfortune to be linked with the less than successful Prestel debacle which does their market image no good.

The other rising star of the European scene (as well as being a darling of the Wall Street analysts) is Wang with 34% growth in sales for IBM.

Europe in dollar terms, is impressive overall growth at 50% a year.

The big unknown in European equation is CII-Honeywell Bull which is currently nationalised by the French government, with Honeywell's stake dropping from 47% to 31%. CII-Honeywell's losses have been more dramatic than were before Laidlaw and Wilson plied their particular brand of disc massacre.

One thing is sure, CII-Honeywell is not hold second place in the European Top 25 another year.

DEC is challenging way

and is at last beginning to red

US success in Europe. It is a

soon move into second pla

Europe, which would make it

world's second largest com

manufacturer, the position it

readily occupies in the US.

DEC is challenging way

and is at last beginning to red

US success in Europe. It is a

soon move into second pla

Europe, which would make it

world's second largest com

manufacturer, the position it

readily occupies in the US.

DEC is challenging way

and is at last beginning to red

US success in Europe. It is a

soon move into second pla

Europe, which would make it

world's second largest com

manufacturer, the position it

readily occupies in the US.

DEC is challenging way

and is at last beginning to red

US success in Europe. It is a

soon move into second pla

Europe, which would make it

world's second largest com

manufacturer, the position it

readily occupies in the US.

DEC is challenging way

and is at last beginning to red

US success in Europe. It is a

soon move into second pla

Europe, which would make it

world's second largest com

manufacturer, the position it

readily occupies in the US.

DEC is challenging way

and is at last beginning to red

US success in Europe. It is a

soon move into second pla

Europe, which would make it

world's second largest com

manufacturer, the position it

readily occupies in the US.

DEC is challenging way

and is at last beginning to red

US success in Europe. It is a

soon move into second pla

Europe, which would make it

world's second largest com

manufacturer, the position it

readily occupies in the US.

DEC is challenging way

and is at last beginning to red

US success in Europe. It is a

soon move into second pla

Europe, which would make it

world's second largest com

manufacturer, the position it

readily occupies in the US.

DEC is challenging way

and is at last beginning to red

US success in Europe. It is a

soon move into second pla

Europe, which would make it

world's second largest com

manufacturer, the position it

readily occupies in the US.

DEC is challenging way

and is at last beginning to red

US success in Europe. It is a

soon move into second pla

Europe, which would make it

world's second largest com

manufacturer, the position it

readily occupies in the US.

DEC is challenging way

and is at last beginning to red

US success in Europe. It is a

soon move into second pla

Europe, which would make it

world's second largest com

manufacturer, the position it

readily occupies in the US.

DEC is challenging way

and is at last beginning to red

US success in Europe. It is a

soon move into second pla

Europe, which would make it

world's second largest com

manufacturer, the position it

readily occupies in the US.

DEC is challenging way

and is at last beginning to red

US success in Europe. It is a

soon move into second pla

Europe, which would make it

world's second largest com

manufacturer, the position it

readily occupies in the US.

DEC is challenging way

and is at last beginning to red

US success in Europe. It is a

soon move into second pla

Europe, which would make it

world's second largest com

manufacturer, the position it

readily occupies in the US.

DEC is challenging way

and is at last beginning to red

US success in Europe. It is a

soon move into second pla

Europe, which would make it

world's second largest com

manufacturer, the position it

readily occupies in the US.

DEC is challenging way

and is at last beginning to red

US success in Europe. It is a

soon move into second pla

Europe, which would make it

world's second largest com

manufacturer, the position it

readily occupies in the US.

DEC is challenging way

and is at last beginning to red

US success in Europe. It is a

soon move into second pla

Europe, which would make it

world's second largest com



BLAIR... Mid-'83 target.

Design centre for UK

by Kevin Cahill
LSI Logic, the Californian-based logic array designer and manufacturer, will site its first non-US customer design facility in the UK.

Bob Blair, the company's international marketing vice-president, made the announcement last week in London, and confirmed that the site was likely to be between Reading and Bristol. "It must be within a stone's throw of the centre of the market," he said.

LSI's customers range throughout the electronics industry and consist principally of companies seeking to condense existing electronics functions from full board size, to units of a few, or even a single chip. Blair said that the target date for the facility was mid 1983.

The UK installation will be a "clone" of the current set-up in the company's head office in Milpitas, California, complete with Amdahl V6 5 mips mainframe. "We do not intend to use either satellite or lease lines to hook into Milpitas. But our UK customers will have everything by way of design facility that exists in Milpitas," Blair said.

LSI's Milpitas facility has a complex manufacturing system for taking a customer's design through prototype production, as well as the design facilities. The company, which is little over a year old, has attracted over \$16 million of venture capital, and \$11 million in lease facilities so far, making it one of Silicon Valley's more expensive start-ups last year.

LSI Logic is currently producing 10 to 15 new designs a month for its customers, but the target is one a day by the end of the year. To move into profit the company needs this kind of throughput.

Sinclair again hits snags with ad authority

by Robert Parry

DELAYS in the delivery of Sinclair's latest personal computer offering, the ZX Spectrum when it is eventually delivered, along with a software demonstration tape. New orders - which are still pouring in at about 1,500 a week - are told to expect a 12-week delay and offered the choice of money back or the £10 voucher and tape.

The backlog of undelivered orders for the machine is now stretched to 12 weeks and has brought a number of complaints to the Advertising Standards Authority. Sinclair ran into the same problems on the release of his first two machines.

Nearly 40,000 orders have been received since the Spectrum's April launch, and high rejection rates from the quality control checks at the Timex factory, coupled with Timex's annual three-week holiday break, caused the order backlog. Just under 20,000 Spectrums have been delivered.

But the factory is now back up to a production rate of 5,000 units a week, says a Sinclair spokesman, which should cut back the waiting list by the end of September.

Sinclair's trouble with the ASA stems from the requirement that mail order goods be delivered within 28 days. Several public complaints have been received by the ASA, and the minister will be challenging some of the entries.

Observant readers of the advert will notice that a handful of changes have crept into the comparison table, particularly in the Atari 400 column. Sinclair has now put out three versions of the insert, correcting some errors in the first one at each reissue.

Amdahl solves an IBM upgrade dilemma

by Kevin Pearson

A LARGE IBM user has found an interesting solution to the thorny problem of upgrading its IBM 3033. Legal and General, one of the UK's largest insurance companies, has brought an Amdahl 470/V8 to run alongside its existing machine.

The problem faced by the company, in common with many other 3033 users, is that IBM's current product line, mainly the 3081 series which is now being shipped in bulk, represents a massive rise in power, beyond the immediate

Graves says support for Extended Architecture is "very important because MVS/XA is a major change."

Legal and General will be able to use the Amdahl as a development machine for MVS/XA without interfering with its main production systems, running on the 3033.

Cost-Effective Communications

X25 INTERFACE TEST EQUIPMENT

DYNATEST DATA SCOPES DATELINE MONITORS & SIMULATORS

HANDHELD INTERFACE TESTERS DYNAMITE I, II & III

NETWORK CONTROL V24 VF PATCHING & SWITCHING

For further information:
NOLTON COMMUNICATIONS
LTD.
Holdings Road, Cheshunt
Herts EN9 9TL
Tel: 0892-33855 - Telex:
24882

Nolton
Commitment in communications

NEED YOUR COMPUTER LINK with the confuter c100

A data link scrambler to safeguard against illicit entry into your computer system.

SECURE YOUR COMPUTER LINK with the confuter c100

Argus 700E models.

The passenger terminal sector receives flight data from the central machine and controls the updating of the public display and television displays. Each of the three terminals has the ability to take over the function of any of the others in the event of a machine failure.

In the Central system a database holds key files on flight schedules, active flights, group movements and accounts, which are updated by input from 16 VDUs. This will handle about 300,000 flight movements a year, and provide information for over 25 million passengers a year.

All the software runs under Vaughan's Master Control Executive (MACE) operating system, designed to minimise response times by having a common database and interface area with no overhead instructions.



Pundit sees bleak future for PCMs

by Kevin Pearson

IT IS not often that the IBM-watching pundits lay their views on the line along with the opinions of the people they write about. But that is what IBM-watcher Bob Fertig almost did, earlier this year.

Fertig believes MVS/XA constitutes a major change in direction for IBM, and that there is no reason why IBM should reveal details which give the PCMs an easy introduction into the new environment that IBM is creating with Extended Architecture.

The PCMs naturally disagree with this proposition. David Anderson, Amdahl's director of planning in California, gave this response to Fertig's scenario: "We think we know enough about this architecture that whatever the change is we can in fact implement it."

National Advanced Systems, the other major contender at the top end of IBM's market, takes a bleak view of the plug-compatible industry in the future. He believes IBM is a new, leaner and hungrier IBM than ever before, which no longer offers the PCMs a price umbrella under which to shelter.

It is also making radical changes in its operating systems which the PCMs will be hard put to copy, he says.

The massive software and expertise investment which has kept both IBM and its plug-compatible competitors in business is obsolete and will need to be replaced this decade, thus changing the face of the IBM market, according to the report.

Amdahl's business has been built on selling CPUs, and it is only now starting to offer a fuller range of products. This, says Fertig, is why Amdahl is likely to be relatively the worst affected PCM.

NAS does not suffer from the same problem, Fertig says in the report. NAS gets the Fertig vote of confidence because of its wide product range, including peripherals, because of its technological links with Hitachi, because its machines are heavily microcoded, like IBM's but unlike Amdahl's, and because NAS, which was formed out of the wreckage of crashed leasing giant Ite, is now profitable.

He bases this view on the fact that IBM has not revealed the technical interface detail of MVS/XA, and adds that IBM will break with its recent policy of an

initial deal.

British Telecom's decision to award a further damaging blow earlier this month when British Telecom removed all the pages on the system booked by Track 2, an advertising agency based in London's Noring Hill Gate.

This action, taken allegedly because Track 2 has failed to pay its bills, has meant an estimated 500 companies have had to take over the pages concerned and to publish them free of charge.

British Telecom's decision is bound to distract Prestel information providers, and so increase the

SALES BRIEF

Glasgow upgrade for Honeywell

HONEYWELL has won £800,000 contract from Glasgow District Council to upgrade existing house allocation software running on the company's 66 mainframe.

The contract will bring increased power to the 66 processors, as well as higher capacity equipment including six disc drives, a four

SOFTWARE FILE

'Piracy killing off new product launches'

LACK of adequate protection against piracy is deterring software houses from releasing new products.

This is the view of Jonathan Baldachin, managing director of Little Genius, the company which has launched what is claimed to be a unique method of preventing unauthorised copying of discs and illegal use of software.

"I have spoken to many companies that have products ready to release, but they don't want someone else to get the benefit of their work," he said.

"Piracy kills off normal behaviour of the market, because the pirate can fill the market and supply the demand, inhibiting the commercial dealer. This is a problem for us," he said.

"Quite apart from commercial piracy, where someone has copied the disc and sold it commercially under their own packaging, there is also casual infringement, where dealers make copies to throw in with odd machines, or to give to friends," said Baldachin. "Large corporations often buy only one copy of a piece of software and copy it for internal use, so that the supplier gets paid only for one licence instead of perhaps 20."

"There are many methods of software protection on the market, the majority a combination of hardware and software. Mektronics Consultants has developed Safe

ware, a small hardware unit plus software interrogation routine which allocates a unique code to each application, similar to the original dongle produced for the Wordcraft package.

An alternative type of dongle is also available from accounting specialist TABS, which has been widely used to protect TABS' own software on all computers with an integral RS232 interface. This device, for which a patent is pending, fits on the RS232 interface of any CP/M-based machine and is addressed by the program disc, which checks for a serial number. Surprisingly, the product has met with little response in the UK, despite its low price of £60.



September 1 deadline for Extended Pascal

WORK is to begin on September 1 on drafting a domestic standard for Extended Pascal, the expanded version of the structural programming language developed by Professor Niklaus Wirth in Zurich.

The American National Standards Committee X3 Technical Committee on Pascal, X3J19, has set September 1 as the cut-off date for acceptance of proposals for potential extensions to be included in the initial draft. Proposals will still be solicited after this date, but consideration of them will be postponed until after the first batch have been examined by the Extension Task Group (ETG).

At the moment there are five proposals in the Candidate Extension Library, including OTHERWISE in CASE statement, ranges in CASE statement constant lists, ranges in CASE

variant constant lists, exponential operator, and extended WITH

operator. ETG is also currently reviewing proposal areas such as schema arrays, random I/O strings, exception handling and separate compilation.

Committee X3J19 is undertaking to publish the Candidate Extension Library within a year of the cut-off date.

The average rental period is between 14 days and a month," said John Chesney, joint managing director of SRB. "We have had a lot of enquiries, and are signing up new members every day."

Customers include GEC, Rowntree Mackinroth, the Central Electricity Generating Research Laboratories and the Midland Bank.

"Some of them actually want to try our Visicalc," said Chesney.

by Maggie McLening

50% offer to software developers

TO promote application software for its Dynabyte 5000 microcomputer system, Metrotech is offering 50% price reduction plus marketing advice to would-be software developers.

The offer is open throughout August and September and, since the Dynabyte 5000 offers standard CP/M, MPM and Oasis operating systems, programs developed on it should be portable to other systems.

First product

BUREAU Datsolve, recently acquired subsidiary of Thorn EMI, is offering a financial consolidation package, Conquest, as its first product for sale. Aimed at large companies with multiple subsidiaries, Conquest is an interactive system.

Query by example

A HIGH-LEVEL query by example software tool has been launched by Norsk Data for its 16-bit and 32-bit minicomputers. Called Access, it allows users to think of the database as a set of tables within which data can be inserted, amended, deleted or inspected using simple English-language commands.

Big firms are trying before buying

THE US software products industry confirmed its position at the head of the data processing growth league, according to ADAPSO's latest annual survey of the US computer industry. Sales of software products rose by a massive 45% to \$22 billion, compared with an industry average of 24%.

Massive growth

SOFTWARE that will enable viewdata users to link up with any computer database has been developed by SCL of Surrey. At present, special software has to be written to convert each computer file into a viewdata file.

Viewdata link-up

"The average rental period is between 14 days and a month," said John Chesney, joint managing director of SRB. "We have had a lot of enquiries, and are signing up new members every day."

Customers include GEC, Rowntree Mackinroth, the Central Electricity Generating Research Laboratories and the Midland Bank.

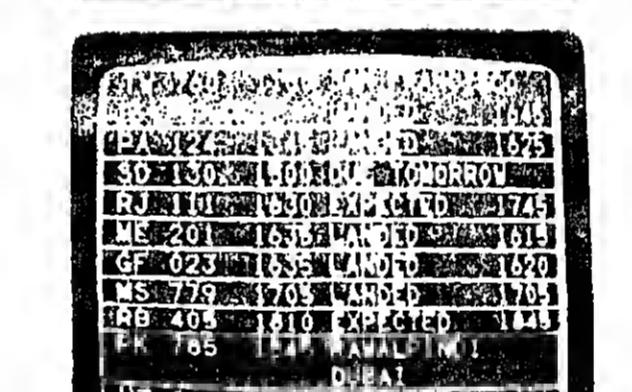
"Some of them actually want to try our Visicalc," said Chesney.

Conference

THE world's largest software conference will come to London in 1985. This is the International Software Engineering Conference, which is held every 18 months and is next scheduled to run for three days in Tokyo this September.

Arrivals

Flight - Time - Information



Bair system controls flight information at Heathrow.

Flight information system installed at Heathrow

PASSENGERS at Heathrow Airport are now dependent on software developed by Vaughan Systems and Programming of Ware, Herts, for flight information.

Vaughan, which has also supplied public information systems for Gatwick Airport and British Rail stations, has now installed the British Airports Information Retrieval (Bair) system at Heathrow. The software covers both Central and Terminal systems, including the microprocessor-driven flight boards and pier-tensioning systems.

Written in Coral 66 real time programming language, Bair consists of two separate programs: one to run on the passenger terminal minicomputers, and a second to run on the main and standby Central machines.

All the software runs under Vaughan's Master Control Executive (MACE) operating system, designed to minimise response times by having a common database and interface area with no overhead instructions.

p-System users' conference

FOURTH bi-annual USUS (UK), the UCSD p-System User Society, will be held at the Polytechnic of Central London from September 7-9, and presented by Dr Carl Meyer.

Open to members and non-members, the conference will cover commercial, industrial and educational applications.

Cryptography tutorial

ADVANCES in cryptography is the subject of a tutorial by Pergamon Infotech, to be held in London from September 7-9, and presented by Dr Carl Meyer.

Those wishing to attend should contact Pergamon Infotech at Berkeley House, Queen Street, Maidenhead, Berkshire.

Why UNIX? UNIX as an Applications Environment Productivity & Debugging Techniques

Open Day Fee £25
For further details contact

CHRIS MILLER
Tel 0632 431761 extn. 7182
Dept. of Computer Studies
The University of Leeds
Leeds LS2 9JT

UNIX is a trademark of Bell Laboratories

CIT101 You've heard about it now discover the better VT100 alternative

EX STOCK
Fully featured
VT100
emulation with added features as standard.

Call us today for new low prices (0734) 580141
Sole authorised UK distributor

MANNESMANN TALLY

7 Cremyll Road, Reading, Berkshire RG1 5NG

Second half of 1982 'industry's low point'

IN our last issue we reviewed an optimistic report by Creative Strategies on the prospects for the minicomputer industry. Now it is the turn of New York stockbrokers Smith, Barney, Harris, Upham and Co. to peer through the short-term gloom and to discern grounds for medium-term optimism.

Smith, Barney's analyst Peter Lane, while admitting that the second half of 1982 will be difficult to predict, notes that it is likely to represent the industry's low point in this cycle.

"The third calendar quarter is always tough in the mini business, with a normal seasonal summer lull in the US, and Europe quiet with vacations. Secondly, with Canada, the US and Europe in the doldrums and a weak capital spending outlook generally, a rapid turn is unlikely and a moderate economic recovery next year is as much as we should expect."

Labé, never one of Wall Street's doom merchants, does say that the minicomputer industry no longer has the growth prospects in the 1980s that it had in the 1970s. The reasons he cites for this are "mostly because of the micro and the improved position of mainframes".

Historically, the major companies in the minicomputer field, and there are now over 70 in the US alone, have achieved double digit growth. And the average

growth rate of the top 10 minicomputer makers during the '70s often exceeded 25%.

But DEC, in particular, has seen an annual growth slide over just two years, from over 35% to something under 20% if last quarter's figures are anything to go by.

Labé says that DEC has been reporting a slowdown in new order rates for months now, and in the quarter ending in March, operating earnings (profits) showed a year-to-year decline for the first time in the cycle, even though reported earnings showed a slight increase because of non-operating income.

One reason for this situation is DEC's relative lack of debt, which is only something like \$320 million in medium and long-term loans, against a cash mountain of \$700 million at the beginning of the recession.

Another probable factor is that the minicomputer is working-capital intensive, so a slowdown in growth usually means that debt decreases and cash generation improves rapidly.

By implication, DEC is still adding to its cash and interest paying a dividend.

Labé notes four appealing aspects of DEC, for medium-term consideration.

"One, the company's business plans are not based on anticipation of an exuberant economy.

The third quarter of 1982 is likely to show an actual decline of close on 2% compared with the quarter just ended, according to Labé, who also cuts his original forecast of sales of \$380 million down to \$322 million.

Reasons for this, apart from "macroeconomic problems", are a probable revenue shortfall from sales in Canada, West Germany and parts of the US, combined with a fall in new customer growth.

For 1983 Labé says that Tandem is likely to face a couple of tough sequential growth quarters, followed by significant improvement.

One good outcome of the slowdown in growth is likely to be a slowdown, if not an actual halt in cash absorption by Tandem.

The slide at Data General will continue says Labé.

It has been having a bad time for almost two years now, and Labé sees the gloom: "If volume does not improve in the December period, we consider it possible that Data General will report a loss... (for the quarter.)

HENSON... tighter controls at Prime.

Hong Kong woos UK computer companies

HONG KONG, one of the most unfettered and successful capitalist economies in the world, has beefed up its representation in London, and is encouraging UK companies to start up manufacturing in the Crown colony.

So far no announcements have been made by any enterprising UK computer companies planning to set up on China's doorstep. But the Chinese themselves have wasted no time in taking up the new incentives.

A joint venture has been established between two Hong Kong companies and a group from the People's Republic of China.

Called Sino On Line Ltd, the new company plans to help boost exports of Chinese microcomputers and to import technology from the West.

Most observers are sceptical about the micro export angle. Few people have seen much of China's electronics industry, and those

who have say that it is manufacturing terms is 10 years or more behind the West.

In the laboratories many state of the art developments are in progress, but with no developed domestic market and the formidable problems of the Chinese language, little is thought to have happened in mass production terms.

China has developed an economic zone in Guangdong Province around Hong Kong, and Commodo has established a plant behind the bamboo curtain.

Most of the work in the Commodo plant is manual, focused on the production of LCD displays, but the company has produced a micro look-alike version of the Commodore Pet called an EYB.

This device is being evaluated in Peking, but so far there is no sign that China is about to become the new victim of the micro revolution.

Venture fund finds few firms to invest in

DESPITE intense activity in the UK in pursuit of good computer companies in which to invest, Venture Capital Fund's United Computer and Technology Holdings remains lightly represented in the industry.

The company is publicly listed and raised over £2 million for investment last year. So far it has been sunk mainly in gilt-edged securities.

Company chairman Tom Buffet says that the building of the portfolio is proceeding much as he expected. But he admits disappointment over the low number of unquoted UK stocks so far acquired.

"There is no shortage of ideas in this country but in new industries it is difficult to identify the correct mixture of technological innovation and talent, combined with the more traditional commercial manufacturing and marketing skills."



De Castro... deters would-be takeover candidates.

Bureau's success was unforeseen

"THE extraordinary financial success of the company over the years was not foreseen." This comment from a brokerage firm refers to a small representative of that allegedly dying breed, the centralised service bureau.

The company, NMW of Nantwich, has recently cleared the decks for its long-awaited Unlisted Securities Market listing by giving all the shareholders one free share for every eight shares they currently hold.

Broker Heseltine Moss says that the NMW share price has been very disappointing this year so far, and outlines some of the reasons.

A bid to acquire a microelectronics company to build the NMW designed HSD1 terminal was thwarted by delays resulting from a battle between the management and a small group of the founding shareholders, who still control voting shares in the company.

From a financial point of view Labé continues to say that DG is ripe for a takeover. "At present the company is an asset situation, and perhaps surprisingly, no suitors are evident," he says.

As of March 13 1981, Data General had net working capital of \$27 per share after deducting all debt, and this figure will be higher when the June figures are published. Included in current assets is \$139 million in cash, up to \$2 million since December 22. The book value of the company was approximately \$38 per share.

Labé concludes his survey of DEC by forecasting sales of \$4.6 billion for next year, and a growth rate of 18%.

Al Mullins, DEC's public affairs vice-president, has more than once said that if growth falls below 25% the company may consider paying a dividend.

DEC has never paid dividends, preferring instead to retain profit for growth.

Labé describes Tandem's post-1978 quarter to quarter growth as: "Due to the most powerful quarterly growth records we have ever seen". But he does not expect this to continue.

The third quarter of 1982 is likely to show an actual decline of close on 2% compared with the quarter just ended, according to Labé, who also cuts his original forecast of sales of \$380 million down to \$322 million.

The company, as Labé himself notes, was slow to get into the 32-bit market.

Problems loom for Prime, but no change in forecasts. Despite forecasts of increasing competition from DEC and other 32-bit suppliers, Labé maintains his prediction of \$575 million sales at Prime in 1983, a \$135 million gain on 1982's forecast \$443 million.

He traces the slowdown in Prime's growth pattern to the management changes last year, which have led to greater control, but no return to the growth of two years ago.

Labé suggests that Prime will introduce a series of terminals later this year, and will become much more aggressive in vertical markets.

Joe Henson, Prime's new president, has focused much of his energy on stabilising the company's presence in the marketplace, particularly internationally.

For 1983 Labé says that Tandem is likely to face a couple of tough sequential growth quarters, followed by significant improvement.

One good outcome of the slowdown in growth is likely to be a slowdown, if not an actual halt in cash absorption by Tandem.

The slide at Data General will continue says Labé.

It has been having a bad time for almost two years now, and Labé sees the gloom: "If volume does not improve in the December period, we consider it possible that Data General will report a loss... (for the quarter.)

HENSON... tighter controls at Prime.

DESPITE intense activity in the UK in pursuit of good computer companies in which to invest, Venture Capital Fund's United Computer and Technology Holdings remains lightly represented in the industry.

The chairman said that he hopes that 1982-83 will prove more rewarding in this respect. The accounts identify two American companies in which UCAT successfully invested at an early stage.

One was 5½in Winchester manufacturer Computer Memories which attracted a 25% stake from Intel not long after UCAT got into the stock. According to Buffet, the shares UCAT held rose by 25% shortly after the company was launched.

UCAT has also invested in Panaphic Systems, the vendor of Esprit, the new company plans to help boost exports of Chinese microcomputers and to import technology from the West.

Most observers are sceptical about the micro export angle. Few people have seen much of China's electronics industry, and those

by Kevin Cahill

MICRO NEWS

Software support for Intel 432

DEVELOPMENT support for the iAPX 432 32-bit microprocessor has been introduced by Intel. A cross development system, coded 432CDS, will provide software development support for iAPX 432 chips and board level products, allowing programs to be developed on a VAX 11/780 host minicomputer.

NMW hopes to list its shares on the US in November.

Last year the company made a profit of £544,000, pre-tax, on turnover of £2.3 million.

The package includes hardware and software products, and is designed to support large scale development projects. Typical uses seen for the 432 chip set are in alternate sources for the other's gate array families, and will provide compatible design automation systems for development of customer designs.

Customer access to the design automation system is through NatSemi's gate array design centres in Bedford and Munich and Motorola's European gate array centre, also in Munich. The number of design centres will increase as the more

recent aspect of the agreement.

Co-ordination of different software modules is managed by the development system.

Hardware products from Intel contained in the package include the System 432/670 execution vehicle - a computer based on 432 prototyping tools which executes compiled code under the control of an Intel Series III microcomputer development system.

Software includes an Ada compiler and a version-checking linker (Link-432) which run on the host VAX mini. A system level debugger (Debug-432) run on the Intel Series III and there is operating system software (IMAX-432) and diagnostics (DSP-432) for the execution vehicle.

Now it seems to have settled on the IBM Personal Computer, which it is putting on to the market with a three-pronged attack. The machine is still not available through official IBM channels in the UK, though moves from IBM are expected next month, and the supply of units to the UK relies on "grey imports" of the US model.

Telecomputing itself has set up a new company, Telecomputing Centre (Oxford) Ltd, which has the main aim of increasing awareness of the machine among potential users, but will also sell to make Sord a Japanese Apple.

Shina has long been ambitious



PANTON... Users are looking for a "Rolls Royce" support service.

Telecomputing back in the micro business with IBM Personal

TELECOMPUTING of Oxford has joined the rush of would-be dealers for the IBM Personal Computer. Since the break-up of its microcomputer company Telecomputing Systems following an acrimonious law-suit with Intel, Telecomputing has a

hardware to customers. It will not import the machines directly, but get them through a Manchester-based company, Doxiver.

Doxiver was set up a year ago, staffed by ex-employees of Telecomputing Systems from the top down. It took over Telecomputing's ECS Microsystems business, providing maintenance support to existing ECS users and supplying further systems.

Because of this base of old customers, Telecomputing has a direct holding in Network Designers, but Telecomputing managing director Bernard Panton and technical director John Garrick are both directors of Network Designers.

Telecomputing itself has no direct holding in Network Designers, but Telecomputing managing director Bernard Panton and technical director John Garrick are both directors of Network Designers.

Now that the micro industry has begun to stabilise, users have become more discerning and are looking for a company which will provide a "Rolls Royce" support service," says Panton. "The Telecomputing Centre has both the experience and the team to provide that service."

Its main market is still in ICL mainframe sites says Parker - because of the Telecomputing Centre's history - so among the add-ons it sells with the micro is a board from Oxford-based Network Designers

which began with something slower."

For a "nominal charge", customers will be able to have design information developed by one supplier transferred to the other through a compatible database tape interface.

Customers supply logic dia-

grams and test patterns as basic

information to input to the system.

have a hand in the deal of the Century on DEC terminals!

great products at sensational prices

VT100 Standard	£ 980
VT101 Low Cost	£ 725
VT125 Graphics	£ 1895
VT131 Block Mode	£ 995
LA34 Keyboard Printer	£ 675
LA34 Printer only	£ 585
LA120 Keyboard Printer	£ 1295
LA120 Printer only	£ 1250

full range of other Options also in Stock

extra cost!

extra cost

Principles of Infotecture - 10

System design lacks a good common language

THE Tenth Principle of Infotecture states: "Written, structured, and quantified documentation about high-level information systems architecture (infotecture) is necessary to overcome the communication problems caused by system complexity, time and the many people involved."

We are constantly giving lip service, and sometimes real hard work, to documentation. Unfortunately, at best, it is not the most critical kind of documentation we usually worry about.

One of the tasks of a designer is to write down all the critical goals of our project: "hardly ever" is my observation. And it is just as partial or as bad at all other levels of design documentation.

We fail to structure our high-

levels of software design. It had to be satisfied with design reviews (which are roughly four times less effective) because inspection is a process that presumes the utmost in clarity and unique interpretation of the various levels of design which it examines and compares against each other.

If that clarity is absent, then the inspection process is correspondingly ineffective. It is rather like

"unfortunately they still lead to specifications that are as ambiguous as the English language".

We fail to write down fundamental aspects of our high-level design. Typically, we do not even

mention the "pretend" battles usually

begin with conventional weapons, but many officers have a disquieting propensity to "go nuke" (charming turn of phrase) when the enemy gains an advantage.

One officer indiscriminately picked the largest nuclear weapon from his tactical arsenal in a desperate bid to hold the insidious Russian Red Army.

His bid worked a treat. Red

Army wiped off the map.

But the officer's elation was

short lived. The kiss of death

pecked his face as a growing white

circle on the graphics tablet indicated that he had wiped out all his

own forces as well.

"Holy smoke," he commented.



Tom Gilb is an independent consultant, lecturer and author on computing topics.

related to these functional aspects of it?

One of our greatest and most consistent sins is that we make little use of our civilisation's greatest communication device - the use of measures, and numbers to express qualities and resources required in our future systems, to express our experiences with past systems, or to express our justification of a paper design specification.

I suspect that we will have to experience major tragedies before we wake up to the necessity of a consistently better practice in this area. We only really learn when all is lost.

But there are perhaps some people reading this who have already experienced their hard knocks and who are ready to emulate Ken Christensen in looking for a DP manager.

As an IBM salesman was invited round to display his hardware, English to his DP manager.

Tom Gilb

level infotecture documentation so that it relates to the goals we are trying to achieve. We are so hot on structuring our programs, that we have not yet learned a regular practice for the structure of most high-level documentation.

trying to proof read two presumably indental but different and almost illegible handwritten documents. They may be equivalent, but how can you determine that if you cannot even read the handwriting itself?

Christensen was anxious to find clear design specification languages to use at the highest level. He showed me three volumes of design handbooks used by IBM development labs remarking that

the exception is the "functional" design structure, for which many reasonable methods and languages exist. But what use is this, if the very crux of design, the costs and the qualities of a system, are not

the problem?

One organisation which recognised the problem and showed an advanced understanding of it, was IBM's Santa Teresa Labs. The manager of inspections there, Ken Christensen, told me in 1979 that the company was unable to apply the deep and rigorous inspection methods to several of the highest

FOCUS

A turning point for the DPM

FOR some considerable time, turnkey computing operations have been hovering on the edge of the market, waiting for a helpful push, shovelling in favourable trading wind. Thanks to a combination of persistence, microelectronics and luck, the turnkey show is now well and truly on the road.

Turnkey manufacturers have had to persist in waiting for the business user to face the facts of computing technology life and accept the concept of the total solution. Microelectronics has given the turnkey operations a sizeable boost with basic office, shop and factory equipment capable of linking with central computing facilities. Luck came into it with the introduction of IT Year and the resulting promotion which has made many potential users more aware of computing possibilities and techniques.

The fact that turnkey companies in many cases have assumed the role of the DP manager is one which few industry commentators or even the IDPM appear to have grasped. The role of the DPM was often that of interfacing company requirements with available levels of equipment and technology and co-ordinating adequate teams of analysts, programmers and operators. Somewhere along the way, computing management had to acknowledge the presence of the users, assorted service engineers and vendors of computer supplies.

Companies such as the recently-established Saffronrose Systems of London has announced its intention of marketing its turnkey operations to local trades people such as estate agents as well as the more traditional areas of law and accountancy. Semaphore Computer of Godalming, another notable turnkey operator, sees its turnkey operations areas as being those of supplying small or medium sized systems to companies which appreciate the benefits of computing technology but not the associated

costs and responsibilities normally associated with getting a computer.

Its selected trading areas include publishers and direct mail companies, builders' merchants and the travel industry.

Meanwhile the Riva Turnkey Company of Bolton, is, as its name suggests, a dedicated supplier of turnkey systems. Its chosen area is that of the retail and wholesale trade where point of sale equipment can be hooked up to a central computer. As a result, traders obtain the best of all computing worlds - specifically designed and developed systems, the result of the art technology and support.

The key to all turnkey operations is that of user involvement. While turnkey companies may not have invented the term "user friendly", they certainly accept the principles involved even to the extent of encouraging the formation of user groups, a sign of confidence from the supplier that they are meeting present requirements, and are willing to consider and respond to future demands.

In a computer world increasingly involved in specialisation, with even major system houses tending to concentrate in special IT areas, the pressure is on the turnkey companies to attract and retain personnel with the right talents and skills.

It does seem that the current discussions covering the future role of the DP manager could have overlooked one important factor. For those DPMs prepared to cross the line from using marketing, a job in a turnkey company could provide an interesting career path.

Whether planning, data preparation or operations, few are as well equipped to deal with the stresses and strains associated with computing as the data processing manager.

Alan Simpson

10 YEARS AGO

From Computer Weekly of August 31, 1972

AFTER a delay of 18 months, the Computer Board's recommendation that Glasgow University should have an IBM 370/156 was rejected by the Department of Trade and Industry, which favoured an ICL system for the University. It was announced that an experimental national data network involving the use of packet switching techniques was to be set up by the Post Office

HUMAN TOUCH

Where to find advice

AT EVERY level in a data processing project there is an element of management. Some people see management as the efficient use of resources. The easiest way of achieving efficiency is by making a selection from a wide choice. Having a wide choice improves the chances of finding a better fit between the resource and the requirement. A better fit should be more efficient.

Lining up a wide choice has to be done in a hurry when it is needed so it is a matter that always should be borne in mind. It doesn't take long to find what you need if you have prepared yourself with the appropriate contacts and reference books.

The Computer Users Year Book is in my opinion an excellent source of reference used widely for its salary surveys and its list of users. Few realise that it includes references to Japanese and Albanian character sets, lists of computer periodicals, computer types, supplies of disc pack storage units and financial service companies, to name a few at random. If the CUYB fails, you then go to its list of associations and institutes for a lead who else could help.

There are specialised directories for most trades in the same way that CUYB serves computer users. Beyond those directories, the British Computer Society has an information officer who can usually put you on to someone who might know the answer. The trade associations are always worth a try and both the AICS and CSA provide a service of circulating requests for specific skills round their members.

This universal fact can have unfortunate side effects, as pointed out by Ada guru, John Barnes. Senior decision-makers ignorant of data processing have got kids with ZX81s who learn Basic and attend computer summer schools.

Cliff Dillaway

DOWNTIME

Well, it's one way to stop the conflict

I HEAR that US military chiefs are having great fun with a nuclear war simulation program called Janus, developed at the Lawrence Livermore laboratory. Nuclear fire balls and fall-out can be simulated along with mine explosions, incandescent forest fires and flattened towns in a palette of colour on a graphics tablet.

The "pretend" battles usually begin with conventional weapons, but many officers have a disquieting propensity to "go nuke" (charming turn of phrase) when the enemy gains an advantage.

One officer indiscriminately picked the largest nuclear weapon from his tactical arsenal in a desperate bid to hold the insidious Russian Red Army.

His bid worked a treat. Red

Army wiped off the map.

But the officer's elation was

short lived. The kiss of death

pecked his face as a growing white

circle on the graphics tablet indicated that he had wiped out all his

own forces as well.

"Holy smoke," he commented.

Tom Gilb

is an independent consultant, lecturer and author on computing topics.

related to these functional aspects of it?

One of our greatest and most consistent sins is that we make little use of our civilisation's greatest communication device - the use of measures, and numbers to express qualities and resources required in our future systems, to express our experiences with past systems, or to express our justification of a paper design specification.

I suspect that we will have to experience major tragedies before we wake up to the necessity of a consistently better practice in this area. We only really learn when all is lost.

But there are perhaps some people reading this who have already experienced their hard knocks and who are ready to emulate Ken Christensen in looking for a DP manager.

As an IBM salesman was invited round to display his hardware, English to his DP manager.

Tom Gilb

level infotecture documentation so that it relates to the goals we are trying to achieve. We are so hot on structuring our programs, that we have not yet learned a regular practice for the structure of most high-level documentation.

trying to proof read two presumably indental but different and almost illegible handwritten documents. They may be equivalent, but how can you determine that if you cannot even read the handwriting itself?

Christensen was anxious to find clear design specification languages to use at the highest level. He showed me three volumes of design handbooks used by IBM development labs remarking that

the exception is the "functional" design structure, for which many reasonable methods and languages exist. But what use is this, if the very crux of design, the costs and the qualities of a system, are not

the problem?

One organisation which recognised the problem and showed an advanced understanding of it, was IBM's Santa Teresa Labs. The manager of inspections there, Ken Christensen, told me in 1979 that the company was unable to apply the deep and rigorous inspection methods to several of the highest

costs and responsibilities normally associated with getting a computer.

Its selected trading areas include publishers and direct mail companies, builders' merchants and the travel industry.

Meanwhile the Riva Turnkey Company of Bolton, is, as its name suggests, a dedicated supplier of turnkey systems. Its chosen area is that of the retail and wholesale trade where point of sale equipment can be hooked up to a central computer. As a result, traders obtain the best of all computing worlds - specifically designed and developed systems, the result of the art technology and support.

The key to all turnkey operations is that of user involvement. While turnkey companies may not have invented the term "user friendly", they certainly accept the principles involved even to the extent of encouraging the formation of user groups, a sign of confidence from the supplier that they are meeting present requirements, and are willing to consider and respond to future demands.

In a computer world increasingly involved in specialisation, with even major system houses tending to concentrate in special IT areas, the pressure is on the turnkey companies to attract and retain personnel with the right talents and skills.

It does seem that the current discussions covering the future role of the DP manager could have overlooked one important factor. For those DPMs prepared to cross the line from using marketing, a job in a turnkey company could provide an interesting career path.

Whether planning, data preparation or operations, few are as well equipped to deal with the stresses and strains associated with computing as the data processing manager.

Alan Simpson

Cliff Dillaway

is an independent consultant, lecturer and author on computing topics.

related to these functional aspects of it?

One of our greatest and most consistent sins is that we make little use of our civilisation's greatest communication device - the use of measures, and numbers to express qualities and resources required in our future systems, to express our experiences with past systems, or to express our justification of a paper design specification.

I suspect that we will have to experience major tragedies before we wake up to the necessity of a consistently better practice in this area. We only really learn when all is lost.

But there are perhaps some people reading this who have already experienced their hard knocks and who are ready to emulate Ken Christensen in looking for a DP manager.

As an IBM salesman was invited round to display his hardware, English to his DP manager.

Tom Gilb

is an independent consultant, lecturer and author on computing topics.

related to these functional aspects of it?

One of our greatest and most consistent sins is that we make little use of our civilisation's greatest communication device - the use of measures, and numbers to express qualities and resources required in our future systems, to express our experiences with past systems, or to express our justification of a paper design specification.

I suspect that we will have to experience major tragedies before we wake up to the necessity of a consistently better practice in this area. We only really learn when all is lost.

But there are perhaps some people reading this who have already experienced their hard knocks and who are ready to emulate Ken Christensen in looking for a DP manager.

As an IBM salesman was invited round to display his hardware, English to his DP manager.

Tom Gilb

is an independent consultant, lecturer and author on computing topics.

related to these functional aspects of it?

One of our greatest and most consistent sins is that we make little use of our civilisation's greatest communication device - the use of measures, and numbers to express qualities and resources required in our future systems, to express our experiences with past systems, or to express our justification of a paper design specification.

I suspect that we will have to experience major tragedies before we wake up to the necessity of a consistently better practice in this area. We only really learn when all is lost.

But there are perhaps some people reading this who have already experienced their hard knocks and who are ready to emulate Ken Christensen in looking for a DP manager.

As an IBM salesman was invited round to display his hardware, English to his DP manager.

Tom Gilb

is an independent consultant, lecturer and author on computing topics.

related to these functional aspects of it?

One of our greatest and most consistent sins is that we make little use of our civilisation's greatest communication device - the use of measures, and numbers to express qualities and resources required in our future systems, to express our experiences with past systems, or to express our justification of a paper design specification.

I suspect that we will have to experience major tragedies before we wake up to the necessity of a consistently better practice in this area. We only really learn when all is lost.

But there are perhaps some people reading this who have already experienced their hard knocks and who are ready to emulate Ken Christensen in looking for a DP manager.

As an IBM salesman was invited round to display his hardware, English to his DP manager.

Tom Gilb

is an independent consultant, lecturer and author on computing topics.

related to these functional aspects of it?

One of our greatest and most consistent sins is that we make little use of our civilisation's greatest communication device - the use of measures, and numbers to express qualities and resources required in our future systems, to express our experiences with past systems

Anything over 2secs is a slow response

WHAT is a good response time? The answer depends on the application, and can be anything from one second to 24 hours. An operator submitting a batch of transactions may be only too happy with a response time of five minutes while he has a smoke and cup of coffee.

The programmer sitting at his terminal, however, demands much faster responses, certainly no longer than four seconds and preferably under two.

In a typical session, several hundred responses may be called for. The difference between two and five seconds per response then multiplies to many programmer minutes — not to be sneezed at, especially if he is a contract programmer, earning £10 an hour or so.

A most unscientific Programmers Page poll elicited that 1.7 seconds is the average response time required by programmers. Most would settle for two, as confirmed by Computer Technology (CTL) which makes Momentum, a resilient system based on its 8000 Series machines.

"Most people put in a requirement spec that expects responses to be within two seconds most of the time and not more than five seconds," says a CTL spokesperson.

Softlab chose the Philips P7000 for this dedicated work — the key

Who's dedicated to maintenance?

MANY programmers begin their careers in software maintenance in the belief that they can learn from code already written, and at the same time do least damage. Both beliefs are false. Existing code is seldom perfect and any imperfections will only be amplified by a trainee programmer.

Another chore commonly lumped on the hapless trainee is documentation of large chunks of turgid incomprehensible code. This fate befell me early in my lacklustre programming career, and such was the mess I made of the job that I was lucky to escape the sack.

Some people argue that the answer to maintenance problems is to have a team dedicated to it, and statistics can be produced to back up their case.

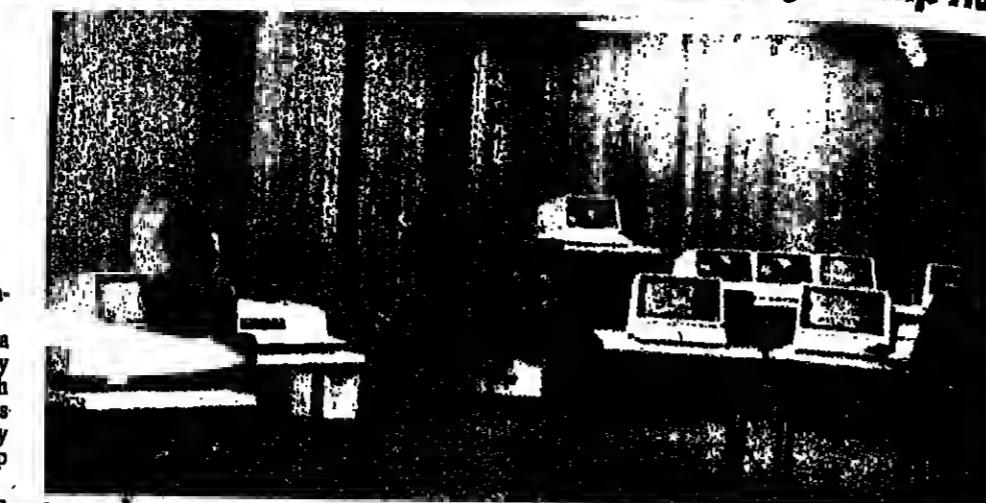
Certainly, with a dedicated department, less time is lost exchanging information. Some companies run special teams of test and maintenance analysts who file error reports and pass them up to the programmers for implementation. The turnaround on this can be amazingly slow — at one place I worked it would take an average two weeks for a bug to be confirmed fixed after its initial detection by the test analyst. No way to work.

PUZZLER

THIS week's puzzle involves laying out a complete set of 28 dominoes in an 8 x 7 grid, to make a Magic Square. In order to produce the requisite "square" the bottom row of this matrix is to consist of "blank" domino-halves.

The seven dominoes incorporating blank-halves (with the halves shown shaded) are already positioned here on the grid. The blank-blank piece is lying horizontally, and the other six vertically.

The problem is to place the remaining 21 dominoes either vertically or horizontally to fill the empty spaces, in such a way that the sum total is a Constant 24 for each of the seven "active" horizontal rows, seven vertical rows, and two main diagonals. See page 89 for solution.



Programmers require an average response time of 1.7 seconds.

Nick Wenman of Philips Data Systems, which has recently put a new software development aid called Maestro on to its 8000 minicomputer, agrees, although he goes one second better. "All editing response times on Maestro are less than one second," he says. "A search may take more than a second, but if you are changing something, or paging through a file, response is usually immediate.

This gives a near instant echo on the screen of the contents of relevant files, and at the same time anything on the VDU gets back to the processor almost instantly.

Wenman tells of top secret IBM research aimed at "sub-second" response times, but my enquiries failed to evoke any hard facts.

The Maestro available from Philips is established as a European standard development tool and was put together by Softlab in Germany. The idea is that program development is removed from the main production computer to a dedicated microcomputer, on which a variety of debugging and editing tools are available.

At present IBM uses a TPI monitor to measure the time taken for signals to return from the central processor. But there is also the time from the terminal to the TPI monitor. "With a heavily loaded cluster of terminals, this could go

up to 10 seconds in bad cases," says Ken Gell, who is a development team at Harwell. "Snapi allows users to do a speed of line and the main terminals to a cluster," he says.

Gell admits that Snapi is a commercial success. "This is because users do not spend money to tell them they are going to spend more money," he says.

But as IBM networks get larger, terminal movement of the cursor on the screen to keep response times below two seconds, often under one.

As far as the user is concerned,

OP SPOT

The ops manager is rarely given vital facts about his firm's future. But he must still plan effectively, says Brian Pugh

Top managers in desperate need of advice on DP policy



The author, Brian Pugh, is an operations manager with more than 10 years' experience on a major IBM site.

ONE OF the many duties of an operations manager is to participate in planning exercises for future requirements. The two principal areas of concern are capacity and manpower planning. The degree of involvement will obviously vary within each installation, but it should be a very high one.

Traditionally all forward planning has been done by looking at historic trends and then assuming that these trends will continue with minor adjustments for any known changes in the relevant factors. In DP, even with the absence of corporate strategies and long term projects, history will show a continual increase in the demand for CPU power and disc space.

Against this background, forward planning is still essential to ensure that users are provided with the service they expect. In order to carry this out a more radical approach is required incorporating a more comprehensive set of pointers.

Unfortunately, DP departments have made things more difficult for themselves by failing to make sufficient impact within their own companies. Very few organisations, however, have, as a serving member of their

board of directors, a DP professional who can advise them of the impact the state of the art can have on management goals.

Where a company has a long term business strategy very little information concerning it is passed down the line to the DP manager to help him shape his plans. Whatever is available to him is often restricted to existing and possible projects. Most projects give little indication of the ultimate destiny of the company, planned or otherwise.

Again the DP department must take the blame for this state of affairs. Fifteen years ago, or more, there were golden opportunities to impress upon management new techniques and new ideas, to show them better ways of running their business — to instil a new dynamism in decision making.

Today because of poor system design, bad implementation and lack of imagination, many installations do not enjoy the confidence of their directors to act as advisers on the critical aspects of running the business. The majority of the systems are simply computer-based replacements for those which were originally clerical or mechanical. However integrated these may be they can only be regarded as the first phase of the more innovative approach that is urgently needed.

These are the sort of questions the operations manager and his colleagues should be asking when looking to the future. The answers can be found within the company, by reading the trade Press, the financial pages of leading newspapers and investment journals.

When you have carried out this exercise you should have a clear



If it were a competitor, what would happen to your department? If there were a competitor big enough or strong enough to take over, would the Monopolies Commission allow it? Would it be somebody outside the industry, if so who? Who has the financial muscle to make a bid? What assets does your company have to make it attractive?

These are the sort of questions the operations manager and his colleagues should be asking when looking to the future. The answers can be found within the company, by reading the trade Press, the financial pages of leading newspapers and investment journals.

Try to predict the future course of the company, even if the boss does not appear to know.

idea of all the possible options open to your company, even if your directors haven't. Of course you will not know which of them will happen, but you may be able to categorise them into the most likely, probable and possible.

The first is to try to predict the future course of the company, even if management does not appear to know.

It is assumed that you are aware of your company's products, the markets it is operating in and the strength of the competition. You should also know the share of the market, and thus your own position in the league table of companies providing competitive services.

Bearing in mind that it is impossible for a company to stand still, it either goes forward or backwards — try to establish where it will be in five years time.

Products do not last for ever. Some are made obsolete by new ones and some die because there is no longer any profit left in them and the company switches its investment elsewhere.

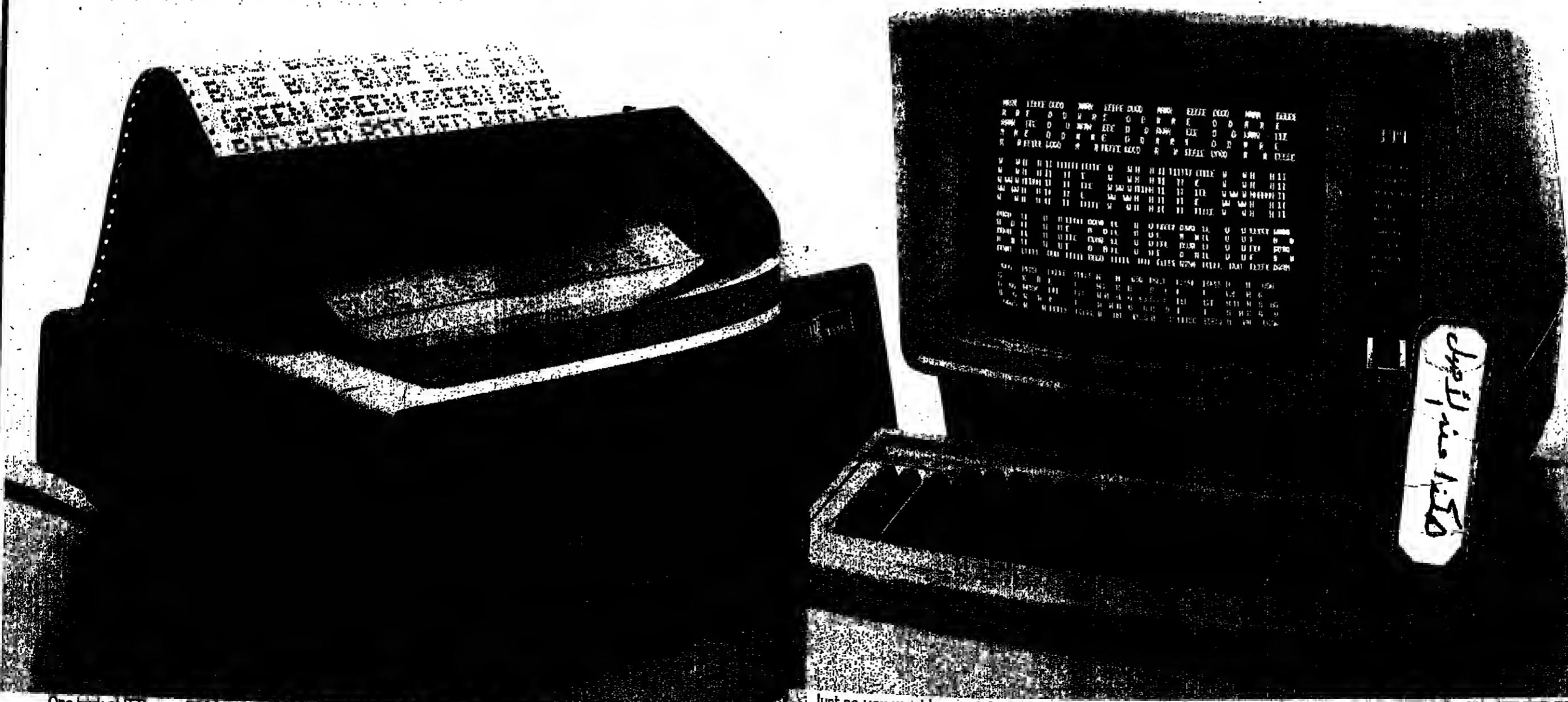
Talk to members of your sales force. Listen to their opinions, check them where possible with the financial facts from the accountants. Try to detect the phasing out of old and the introduction of new products or services. Look for problems that could be solved by the use of data processing or data capture.

Read the company's annual report. Look at trade directories for statistical data relating to the product, its market and number of competitors. Obtain copies of their annual reports.

Look for changes that tend to occur by default, rather than planning. If your company is making a loss you can often predict when closures and staff reductions long before they occur.

While the future may appear to be unpredictable, the consequences of getting it wrong are not.

We put a little ext into our terminals so you get a little ext from your operators.



One look at ITT's new 3289 VDU and 3310 printer should colour your judgement.

That's because they give you four colours instead of just one. Which will certainly brighten up your operator's results.

The VDU will give you red, blue and white, in addition to the usual light green on a dark green background.

And the printer gives red, blue and green as well as black.

Not surprisingly colour makes it easier to understand data, and the more increases your operator's productivity.

It also makes the training of new operators a

Of course you can use different colours to information. And they'll even work in the usual way if you want them to.

Both terminals are completely IBM com-

erationally designed VDU has a non-glare

with multiple cursor styles and a cursor blink.

And it goes without saying that both VDU and

are highly reliable.

Just as you would expect from ITT, Europe's largest communications company.

To obtain extra information send off the coupon now to telephone Peter Manson, National Data Sales Manager, 01-300 7788.

IT Business Systems

Business Systems is the business communications arm of Standard Telephones and Cables plc.

Please send me more details of your new colour VDU & printer.

Name _____

Address _____

Company _____

To: Barbara Pearson, ITT Business Systems, Lion Buildings, Crownhurst Road, Hollingbury, Brighton, Sussex BN1 8AN



Manager for govt IT training centre

THE new Milton Keynes Information Technology Centre (ITEC) has appointed Peter Loud as manager. The centre was set up by the government to help unemployed youngsters gain work experience and training in new technology.

Loud was formerly a senior research engineer at Loughborough University's Institute of Consumer Ergonomics.

ITEC is mainly funded by the Manpower Services Commission and the Department of Industry,

although local sources of funding are also being sought. In October it will take on 30 people between the ages of 16 and 19, who have no formal qualifications, and train them in the use of electronic office equipment, computers and basic workshop electronics.

They will be paid a weekly fixed allowance, and be expected to attend during normal working hours. Recruitment is carried out through the local careers office.



Nick Coombs has been promoted

from UK sales manager to general manager of components firm Burr-Brown. He joined the company in 1976 as a senior sales manager, and was later appointed regional sales manager for the Eastern area of the UK and Scotland. Before joining Burr-Brown he was a sales engineer at Analogic.

■ Brian Cox has been appointed

marketing director at Radio Rentals. He joined the company as an engineering apprentice and served later as head of marketing.

■ Dr Richard Neville has joined the computers and automation division of ERA Technology. He was previously a scientific officer at the Department of Medical Physics and Medical Engineering at the Edinburgh Royal Infirmary.

■ Mick Osborne has been ap-

pointed by Winslow to take

control of all the design and manu-

facturing departments at its socket

plant in Ebbw Vale. He was pre-

viously with Jernyn Indus-

tries, as production manager.

■ Graham Etchells, Andrew McCausland and Philip Patington have joined Cairns as application engineers on the mechanical engineering side. Etchells was previously with GEC Traction, McCausland joins from the Department of the Environment, and Patington was previously with Marconi Space and Defence. Also joining the company is Alan Hall. Formerly with Crosfield Electronics, Hall becomes a microelectronics applications engineer at Cairns.

■ David Hazlewood has been named president of Westinghouse Management Systems SA. He was previously UK manager, and has been with the company for nine years.

■ Ron Miller has been appointed managing director of Hermes Presica UK. He has been with the company for nine years.

■ James Clements has been ap-

pointed senior consultant at In-

sight Marketing and Personnel

Consultants. He was previously

UK sales manager with Anderson Jacobson.

DIARY

SEPTEMBER 8

OTL Give Voice to Information Management. Meeting on OTL's Information Management Processor. Institute of Information Scientists WP and computer information systems special interest group. OTL, London. Tel Helen Harris on 01-229 5069.

SEPTEMBER 14

Expert Systems. Speaker Alex d'Agapeyeff. IDPM West London to Oxford branch. Bell House Hotel, Beaconsfield.

SEPTEMBER 19-24

Industrial digital and microprocessor-based control systems. IEE. Vacation School at Balliol College, Oxford. Details from IEE, 01-240 1871.

SEPTEMBER 23-24

Information systems - analysis and design working party. BCS. Open University, Milton Keynes. Details Guy Fitzgerald, 01-854 2030, ext 377.

OCTOBER 5

The impact of the new tech-

COURSES

■ ADM has expanded its programme of microcomputer training courses, and is now running eight different courses on this subject. There are two new state of the art courses aimed at DP personnel - The Application of Micro Database and Microcomputer Communications and Networks. Other courses include: Microcomputers - A Technical Introduction; Microcomputers - A Systems Introduction; Microcomputers - Advanced Systems Design; Introduction to CP/M; and Advanced CP/M. Users are offered a three-day introduction to micro course, and the Basic language is covered by two courses, Basic Language Review and Basic Language Program.

ming. Details from Ron Hubbard on 01-863 0621.

■ BIS Allied Systems is presenting a three-day workshop for technical staff and management who require a view of the current local area network development in information systems. Delegates will examine design and implementation techniques and application areas from a management point of view. The course also looks at the impact of LANs in the integration of the automated office. Cost per delegate is £350+VAT and the workshop will be first presentation in London from November 16-18. Details from Cherry Picking on 01-261 9237.

THE COMPUTER SHOW FOR EVERYONE!

CITY HALL, GLASGOW
September 7-9, 1982

COMPEC SCOTLAND '82

As a professional computer user, or first time user, you need to see and compare the whole range of equipment and services available for today's specifiers and purchasers - and what better way is there than spending a day at the first Compec exhibition in Scotland - COMPEC SCOTLAND - the most effective way of bringing yourself up to date with everything the computer industry can offer.

COMPEC SCOTLAND offers a truly comprehensive range: mini- and micro-computers, small business systems, printers, software, terminals and other peripherals, telecom equipment, word processors - as well as the many ancillary services and equipment available.

For computer users, suppliers, systems and software houses, the OEM industry, consultants - and particularly those considering the use of a computer system for the first time - this must be the exhibition for you.

Apply now for as many FREE advance registration tickets that you will need. Clip the coupon now!

Please sendFREE advance registration tickets for COMPEC SCOTLAND to:

Name _____
Job title _____
Company _____
Address _____

Return to: COMPEC SCOTLAND '82 Tickets, IPC Exhibitions, Surrey House, Throwley Way, Sutton, Surrey SM1 4QQ.

clw

DATABASE MANAGEMENT? SOME NEW FACTS FROM PERKIN-ELMER

FACT
MASTER
DEVELOPMENT

New RELIANCE

PLUS Transaction Oriented Relational Database Management System offers unmatched programming productivity with all the necessary facilities for fast and easy application development.

- High throughput, on-line data management
- ANSI-74 COBOL or ANSI-77 FORTRAN
- Parallel development and production
- End-user defined screen forms
- Unlimited growth potential
- Developed in the UK

FACT
INTEGRATED
RELATIONAL
DATABASE

New RELIANCE
PLUS is unique. No other manufacturer currently offers such a truly integrated system with relational database, transaction processing and non-procedural query language.

- In-line data dictionary
- Automatic data integrity and recovery
- Centralised data definition
- Automatic database reorganisation
- Multiple level security
- Advanced data compaction feature

FACT
SIMPLE
QUERY
FACILITY

New RELIANCE
PLUS includes a relational query language which meets all the significant James Martin ease-of-use criteria.

- Comprehensive report generator
- Non-procedural
- No programming knowledge needed
- Saved queries and modifications



For more facts on
Perkin-Elmer's outstanding
high-productivity software
and comprehensive range of
32-bit superminis, call
Fred Mascarenhas on
Slough (0735) 34511 or
complete the coupon.

To: Perkin-Elmer Data Systems Ltd., 227 Bath Road, Slough, Berks SL1 4AX

Name _____ Position _____

Company _____

Address _____

Telephone No. _____

CW28

PERKIN-ELMER

If you have £10m a year to spend on computer hardware, how do you choose your vendor? Kevin Cahill went to Germany to see how the world's largest independent commercial DP bureau, Datev, implements a unique dual vendor policy



THE problem with Datev is that it encroaches too many superlatives. It is one of the biggest, maybe the biggest, independent data processing bureau in the world.

The company, organised as a cooperative, has a turnover of over £50 million, a membership of 20,000, and a main database containing the current accounts of 800,000 companies.

Based in the southern German city of Nuremberg, Datev, from its massive data centre in Albert Dure's birthplace, serves a user population of 25,000 terminals, via 21 communications concentrators scattered throughout the rest of the country.

The bureau is 15 years old and has done much of its growing at an average rate of 20% a year at a time when most big and some not so big bureaux are going out of business.

So what's special about Datev? Heinz Sebiger, the chairman, chief executive and founder, explains as he gazes across a "desert of discs" in the data centre.

"Datev is specialised. It serves only one end user, its tax consultant owners, and via the consultants the 800,000 companies who are its owners' clients."

Sebiger pointed to the row upon row of discs. "To serve the full requirements of our customers we keep 250 discs running at one time. The main database of live current accounts is located on just 60 discs, but there is also our Lex-inform database, holding all the relevant laws affecting tax and accounting, plus a series of commun-

taries from the main legal journals. This amounts to about 53,000 pages of documentation."

The massive array of disc units is a mixed collection of Siemens-Fujitsu and IBM drives, principally 3310, 3320 and 3330 units.

The first two IBM 3380 disc drives are being readied for use in the background, but Sebiger is thoughtful when he refers to the 15 months he had to wait to get them.

"We had to go to Siemens/Fujitsu for a whole lot of their 3842 and 3846 units while we were waiting."

He was not precise about what the delays might have cost IBM, but the impression is that more than half the order went East in the interim.

Sebiger says he is an IBM customer in the full sense, which is easy to see in the CPU centre which itself contains two 3033s and a series of other IBM machines

including a 3081D which has only been there for six months and is now being replaced by a 3081K, 40% more powerful than the D.

"We are not a PCM site. What we have, is a dual vendor policy. All our software, including the main databases, are written in IBM software, so we have to be IBM compatible."

But here Sebiger makes a point seldom fully articulated in the industry: "You are not truly independent of IBM until you have a supplier who can provide you with a complete set of systems software."

Which brings him to the other processors in the data centre. Decked out in the Siemens colours, and with Siemens numbers, the two principal processors are nonetheless a Fujitsu M180 and a Fujitsu M200. Until recently these were the top end of IBM's own machines.

"With MVS loaded on a Fujitsu machine there was a fall in unscheduled initial program loads, but the lowest number of unscheduled initial program loads was on the Fujitsu machine running its own operating system."

Datev's entire system, while based on IBM systems software, has been heavily amended by the company's own programmers.

According to Sebiger any machine in the centre must have uninterrupted access to the entire data pool — which explains why a Datev has 260 programmers on the staff.

But the main programming problem, and Sebiger's ultimate guarantee against the micro making his huge organisation redundant, are application program changes.

Last year the data centre director instituted 2,450 application program changes, mostly as a result of changed legislation.

At one point last year Datev had less than a month to make a series of major payroll tax changes which affected payroll runs by more than half the company's membership.

Sebiger suggested that a small company with a standalone micro installation could not hope to cope with the conversion costs whereas Datev could do the job for all 800,000; in one go at lower cost.

CPUs is the communications network, with the 21 concentrators scattered around Germany. These have brought over 40% of the user base on to a local call charge for all their work.

The database storage system, in effect the disc units, are treated as a separate unit, and finally there is the output unit.

Most installations would not have bothered to constitute their printers as a separate part of the system, but Datev has, so far, 19 laser printers, seven from IBM, 11 from Siemens and one from Xerox.

The output, which also seems to account for the bulk of Datev's workforce of 1,600 is 30 tons of paper a day.

This is despatched, in separate packages, to about 16,000 addresses each day, mostly in the form of profit and loss accounts and balance sheets.

Datev also has a room full of microfiche printers which produce over 1,000,000 fiche pages a month.

But the Datev organisation, technically huge and impressive as it is, could easily conceal the real importance of the company in Germany.

Datev now represents most of the data processing activities of



SEBIGER... "Second most important man in the German computer industry"

Dual vendor policy at the world's biggest independent bureau a threat to IBM?

most of German's accountants and tax advisers.

A lot of the work is simple accounting for the smaller clients, the accountants, many of whom could not afford their own computer.

But much of it is specialised accounting, often for companies which do not have a computer.

Periodically, Tennert and his staff prepare a new terminal specification, which they circulate to interested vendors.

In theory potential sales of 25,000 are the lure, although Sebiger insists that he will never give a manufacturer any form of initial contract or minimal volume guarantee.

In practice the Datev specification has begun to assume the form of a terminal standard with the potential well beyond the company's own financial means.

Currently Triumph Adler, alongside Olivetti and Kienzle, are the key suppliers of terminals to the Datev membership, and beyond it to the many clients of the membership.

This price-setting influence is the terminal marketplace has been with Datev for some time, but it is now beginning to have a leadership influence in communications and mainframe use too.

According to a number of German magazines, Sebiger is the second most important man in the German computer industry, after Heinz Nixdorf.

And as a user of vast experience, with his network of data communications connecting the most influential professionals in the commercial world to each other and to their clients, Sebiger has enormous muscle.

He does not complain about IBM; neither does he criticise the company, but he does make clear the endless problems he has had to solve because of the size and flexibility of his principal supplier.

Despite his even-handed approach to IBM, his predilection for a vendor whose designers he can talk to and which will consider suggestions at the design phase, are obvious. And on that basis it is unclear, but preferred vendor is Fujitsu. So much so that a combination of his dealings with the company and the first papers from the fifth generation project date led Sebiger to consider sending four or five of his staff to Japan for a series of three-year tours.

Datev is one of three bureaux which have a somewhat similar structure. One is based in Paris, the other, TEC, in Tokyo. On his trip to Japan Sebiger is hoping to organise a permanent satellite link between TEC and Datev.

Obviously, the contents of the databases will not be exchangeable, but Sebiger hopes to share development tools and expertise with his Japanese partners, thus tightening the links between European user of Japanese technology.

STATE OF THE MARKET

John Aczed reports on the marked decrease in value of foreign sales

British exporters face tough competition as prices are cut

BRITISH exports of computer products have been affected by price cutting and tough competition has been reported in some markets. Sales volumes abroad have been well maintained, but considerably lower prices have been charged for some products in recent months.

According to the latest trade figures, which refer to February 1982, exports of peripheral equipment amounted to 27,400 units, and this represented a rise of 2.6% compared to the previous month. In value terms, however, there has been a drop in sales, with deliveries abroad amounting to only £28.3 million in February as against £30.3 million in the previous month.

British exports of computer products have been recorded in Western Europe, particularly in West Germany. Deliveries to Germany amounted to only £4.3 million, representing a drop of 30% compared to the previous month. Exports to Italy were also down and showed an average drop of 10% in this period.

In contrast, British exports have recorded some gains in North America, especially to the US. They advanced by 12% to nearly £1.2 million, although this figure was still below that seen at the end of 1981.

The figures reveal that the US has increased its market penetration of the British market and its sales reached a peak of £28.5 million. They accounted for 60% of total imports for peripheral products, but other suppliers have also made further inroads into the British market. In particular, West German manufacturers have increased their sales to the UK and reported deliveries of £4.5 million.

Imports from Japan have been fluctuating, but they recorded a

8% by value, but deliveries of VDUs were considerably lower; they dropped by 28%, while in volume terms, only 9,700 were exported during February.

Imports of some computer products were higher during February, and for the peripheral sector as a whole they amounted to £600 per unit. Imports of storage units remained relatively steady, amounting to nearly £1.3 million in February as against £1.2 million in the previous month, while printers used in the computer sector moved up marginally to £1 million.

The figures reveal that the US has increased its market penetration of the British market and its sales reached a peak of £28.5 million. They accounted for 60% of total imports for peripheral products, but other suppliers have also made further inroads into the British market. In particular, West German manufacturers have increased their sales to the UK and reported deliveries of £4.5 million.

Undoubtedly, British exports should increase in the coming months and will benefit from the relatively low level of sterling against other currencies. Further growth in volume terms will be seen, but whether this will be reflected by value is debatable, because of the significant price cutting which is now evident in many markets.

useful increase in February compared to the previous month. They amounted to £1.5 million in this period, but were still lower at the end of 1981.

A marked increase in imports of VDUs has been reported, with the total reaching £6.7 million in February at an average price of about £600 per unit. Imports of storage units remained relatively steady, amounting to nearly £1.3 million in February as against £1.2 million in the previous month, while printers used in the computer sector moved up marginally to £1 million.

The figures reveal that the US has increased its market penetration of the British market and its sales reached a peak of £28.5 million. They accounted for 60% of total imports for peripheral products, but other suppliers have also made further inroads into the British market. In particular, West German manufacturers have increased their sales to the UK and reported deliveries of £4.5 million.

Undoubtedly, British exports should increase in the coming months and will benefit from the relatively low level of sterling against other currencies. Further growth in volume terms will be seen, but whether this will be reflected by value is debatable, because of the significant price cutting which is now evident in many markets.

Imports of some computer products have been fluctuating, but they recorded a

useful increase in February compared to the previous month. They amounted to £1.5 million in this period, but were still lower at the end of 1981.

A marked increase in imports of VDUs has been reported, with the total reaching £6.7 million in February at an average price of about £600 per unit. Imports of storage units remained relatively steady, amounting to nearly £1.3 million in February as against £1.2 million in the previous month, while printers used in the computer sector moved up marginally to £1 million.

The figures reveal that the US has increased its market penetration of the British market and its sales reached a peak of £28.5 million. They accounted for 60% of total imports for peripheral products, but other suppliers have also made further inroads into the British market. In particular, West German manufacturers have increased their sales to the UK and reported deliveries of £4.5 million.

Undoubtedly, British exports should increase in the coming months and will benefit from the relatively low level of sterling against other currencies. Further growth in volume terms will be seen, but whether this will be reflected by value is debatable, because of the significant price cutting which is now evident in many markets.

Imports of some computer products have been fluctuating, but they recorded a

useful increase in February compared to the previous month. They amounted to £1.5 million in this period, but were still lower at the end of 1981.

A marked increase in imports of VDUs has been reported, with the total reaching £6.7 million in February at an average price of about £600 per unit. Imports of storage units remained relatively steady, amounting to nearly £1.3 million in February as against £1.2 million in the previous month, while printers used in the computer sector moved up marginally to £1 million.

The figures reveal that the US has increased its market penetration of the British market and its sales reached a peak of £28.5 million. They accounted for 60% of total imports for peripheral products, but other suppliers have also made further inroads into the British market. In particular, West German manufacturers have increased their sales to the UK and reported deliveries of £4.5 million.

Undoubtedly, British exports should increase in the coming months and will benefit from the relatively low level of sterling against other currencies. Further growth in volume terms will be seen, but whether this will be reflected by value is debatable, because of the significant price cutting which is now evident in many markets.

Imports of some computer products have been fluctuating, but they recorded a

useful increase in February compared to the previous month. They amounted to £1.5 million in this period, but were still lower at the end of 1981.

A marked increase in imports of VDUs has been reported, with the total reaching £6.7 million in February at an average price of about £600 per unit. Imports of storage units remained relatively steady, amounting to nearly £1.3 million in February as against £1.2 million in the previous month, while printers used in the computer sector moved up marginally to £1 million.

The figures reveal that the US has increased its market penetration of the British market and its sales reached a peak of £28.5 million. They accounted for 60% of total imports for peripheral products, but other suppliers have also made further inroads into the British market. In particular, West German manufacturers have increased their sales to the UK and reported deliveries of £4.5 million.

Undoubtedly, British exports should increase in the coming months and will benefit from the relatively low level of sterling against other currencies. Further growth in volume terms will be seen, but whether this will be reflected by value is debatable, because of the significant price cutting which is now evident in many markets.

Imports of some computer products have been fluctuating, but they recorded a

useful increase in February compared to the previous month. They amounted to £1.5 million in this period, but were still lower at the end of 1981.

A marked increase in imports of VDUs has been reported, with the total reaching £6.7 million in February at an average price of about £600 per unit. Imports of storage units remained relatively steady, amounting to nearly £1.3 million in February as against £1.2 million in the previous month, while printers used in the computer sector moved up marginally to £1 million.

The figures reveal that the US has increased its market penetration of the British market and its sales reached a peak of £28.5 million. They accounted for 60% of total imports for peripheral products, but other suppliers have also made further inroads into the British market. In particular, West German manufacturers have increased their sales to the UK and reported deliveries of £4.5 million.

Undoubtedly, British exports should increase in the coming months and will benefit from the relatively low level of sterling against other currencies. Further growth in volume terms will be seen, but whether this will be reflected by value is debatable, because of the significant price cutting which is now evident in many markets.

Imports of some computer products have been fluctuating, but they recorded a

useful increase in February compared to the previous month. They amounted to £1.5 million in this period, but were still lower at the end of 1981.

A marked increase in imports of VDUs has been reported, with the total reaching £6.7 million in February at an average price of about £600 per unit. Imports of storage units remained relatively steady, amounting to nearly £1.3 million in February as against £1.2 million in the previous month, while printers used in the computer sector moved up marginally to £1 million.

The figures reveal that the US has increased its market penetration of the British market and its sales reached a peak of £28.5 million. They accounted for 60% of total imports for peripheral products, but other suppliers have also made further inroads into the British market. In particular, West German manufacturers have increased their sales to the UK and reported deliveries of £4.5 million.

How we've done it

Middle East Computing began as a single-issue publication, covering the Gulf Computer Exhibition and Conference at Dubai last December. Its enormous success revealed such an urgent and widespread demand for computer product information that it is now published regularly.

6000 copies are being sent to established computer users or key personnel within government and major business organisations. In the Middle East countries predominant in the computer market, the circulation was compiled through the full research resources of Computer Weekly and IPC Business Press' coverage of contacts made at the Gulf Computer Exhibition.

Middle East COMPUTING

IPC Electrical Electronic Press Ltd

IPC Business Press Ltd

Advertisement Manager: Chris Prier, Middle East Computing

Tel: 01-881 5600 Ext. 6339

Computer Weekly publication

Advertisement Manager: Chris Prier, Middle East Computing

Tel: 01-881 5600 Ext. 6339

Computer Weekly publication

Advertisement Manager: Chris Prier, Middle East Computing</p

CONTACT XENIA WHITE — FOR ADVERTISING RATES

MARKET PLACE

PHONE 01-661 8671

Is your memory letting you down?
Is your DEC® System memory bound?

Add-on Memory Packs from SK Computer Systems — Competitive costings to upgrade and cope with your total requirement!

128KB 256KB 512KB 1024KB
PDP® 11/23 and 11/23-Plus £ 520 £ 870 — £ 2230
PDP® 11/24 — 975 1350 1800 2650
PDP® 11/44 ECC — — 1760 2500 4172
VAX® 11/730, 11/750, — — 1075 — —
VAX® 11/780 — — 1150 1750 3360

Quantity discounts available. Contact us for all your System requirements and Add-ons.
(Prices exclusive of VAT and delivery.)

SK Computer Systems Limited
St. Michaels House
Norton Way South
Letchworth
Herts SG6 1P8.
Tel: (04626) 79331
Fax: 825647



DEC, PDP and VAX are trademarks of Digital Equipment Co. Limited

CIT 101.
The VDU for DEC™ users.



Standard Features

- VT100™ Compatible F/A/V.
- Printer Port, Independent Bidirectional EIA or 20Mbit/F+ Bit Cable.
- Green or Grey Screen.
- Options
- Tektronix 4010™ Compatible.
- Slave 160 cps Printer

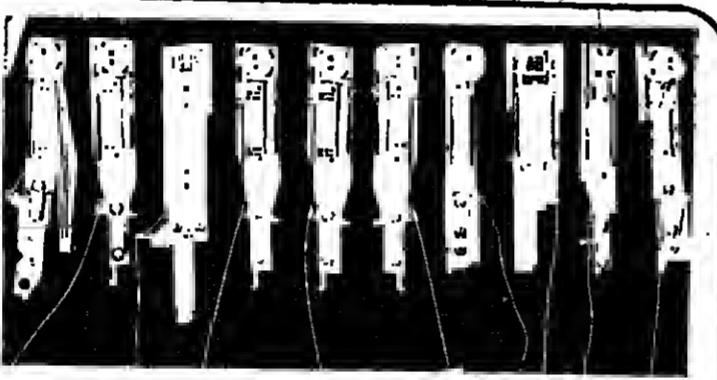
Perfectly matched to your needs



SYSTEMS ARCHITECTS

PRODUCT LINE:

- ★ NEW & REFURBISHED MAGNETIC HEADS
- ★ AIR FILTERS
- DISK DRIVE REPAIR
- MEDIA
- ★ Ampax, CDC, Caelus, Calcomp, DEC, Diablo/DR, Data General, ICL, HP, Iomega, Mamorex, Pertec, Wangco, Xerox, IBM



Phone us now for the "ALTERNATIVE" CDC Magnetic Head

Vas Computer Parts & Accessories Limited

44 Masons Hill, Bromley, Kent 01-464 7227 Telex: 896559

ANADEX PRINTERS EX-DEMONSTRATION MODELS

A limited number of ex-demonstration DP-8000 and DP-9600 type printers are currently being offered at substantial price reductions.

Manufacturer's warranty will apply — Contact Sales Department for details.

Anadex Ltd.
Details from Anadex, Luton, Weaver House, Station Road, Hockley, Basingstoke, Hants Tel: 02572 13401. Telex: 858763 Anadex G.

IBM PERSONAL COMPUTERS

fully supported and guaranteed

ONLY £2,400 WHILE STOCKS LAST

Extensive Business Applications
Include

- FULL WORD PROCESSING
- INTEGRATED ACCOUNTING SYSTEMS
- FINANCIAL PACKAGES

Contact:
MICROCOMPUTERSOURCE NOW
01-387 4599
01-387 4135

Computers Bought and Sold

FOR SALE

DEC PDP11/70 Peripherals
Display and memory
IBM 32, 34, 36 Series 1
Burroughs, Philips, Olivetti
HP 3000

WANTED

DEC PDP11 and Peripherals
IBM 32, 34 and Peripherals
DG Nova 3D, CS
ICL EDS 200

E O B LIMITED

Tel: 0783 44777
Telex: 537763

TEESSIDE POLYTECHNIC TENDERS INVITED

Teesside Polytechnic Computer Centre requests quotations for the supply of:-
40 Lex-Bigler ADM8 Visual Display Units for the new Computer Centre. The units must be obtained for under £14,000. The unit price must not exceed £302.60 including delivery charge but exclusive of VAT.

The units must be the Lex-Bigler ADM8. ADM8 may also be tendered provided that they possess at least the functional capability of that model, green display screen, non-volatile memory, and a standard computer interface. Technical details may be discussed with the Head of the Computer Centre, Middlesbrough 218121 ext 4116.

Delivery is required in 4 weeks before the week beginning 18 September, 1982.

For further information, contact: Supplies/Purchasing Officer, Technical Services, Teesside Polytechnic, Burscough Road, Middlesbrough, and should be returned within 14 days of advertisement to address above.

FOR SALE

2 COMART CP100 COMMUNICATORS — as new
COMART CP100 COMMUNICATORS — second-hand
1 BOROC VDU 10130 — as new
2 BOROC VDU 10130 — reasonable condition
1 OKI PRINTER OP120 Parallel — now
1 OKI PRINTER OP120 Parallel — now
6 PERIFERAL CARTRIDGE TAPE UNITS, PEREX
LIMITED — USED
1 PERIFERAL CARTRIDGE TAPE UNIT, PEREX
LIMITED — USED
8 KINGSHILL POWER SUPPLY UNITS Type
U256N

CONTACT: TOM or RON on 01-637 9696

COMPUTER OPEN DAY

The relaxing way to see computers
IS COMING TO LONDON

Wednesday September 8, 1982
Waldorf Hotel, Aldwych, London WC2

Free admission plus a chance to win
your own personal computer

Systems and Peripherals for OEM's
Hardware, Software and Services
for users — fast computer in
home and work

Exhibition opens
10am — 5pm

Need computer time?

Approx. 20 hours per week
available on Burroughs 561.
Rate £20 per hour.
Hours by arrangement.

Contact T. Newton
Tel: (0278) 52231
ENGFAIR LTD.
Bishop's Stortford, Herts.

WANTED

IBM/ICL
REDUNDANT/OBsolete
COMPUTERS

Raybold Computer Services, Unit 12
West Station Industrial Estate
Spiral Road, Morden, Essex
Tel: Morden 0821 64882

FOR SALE

Twin DEC PDP11/70 Systems each system comprising:-
1/2Mbit Core Memory
PU18 Tape Drive
2xRP04 Disc Drives
LA38 Dacwriter

Various unibus Interfaces.
Sold complete or individually. Available November '82.
Contact Robb Ingram 01-626 3422 ext. 272 Telex 888441

Dealers Welcome

C.D.S.

CREDIT CARD
SATURATED SYSTEMS
POWER
FAX/TELETYPE
DOPPLER/THREE RATES
EQUIP/THREE RATES
MULTIUSER/TELETYPE
AGENTS
COMMERCIAL
11

DO YOU USE AN APPLE SYSTEM IN YOUR BUSINESS?

LOOKING AFTER IT IS OURS
Telephone for a quotation on your system

C.D.S. COMMERCIAL DATA SYSTEMS LTD.

"ON-SITE" MAINTENANCE SERVICES
Specialists in the maintenance of Apple Computer Systems. Including: Corvus, Elec, Visek, Quanta, Paper Tiger, Epson, Centronics, Dex, Oki, Nec

SOUTHERN AREA SALES
TELEPHONE: 0288 710282
Downham Road, Rainham Heath
Billeray, Essex CM11 1PU

NORTHERN AREA SALES
TELEPHONE: 0708 216050
Bacup Road, Rawtenstall
Lancashire BB4 7PA

MEMORY: £1100

Dual height module
for 11/23

1/2 Mbyte £1100

1 Mbyte £2000

Prices shown in V.A.T. correct at time of publication

Redkit

For the inexpensive software solution
Redkit Software, Ltd. 59 Kilney Terrace,
Gatwick, G41 0TG, Tel: 0772 445555

"ALL SYSTEMS GO."

NOWAK
DATENTRAGER
GMBH

NEW/USED COMPUTER EQUIPMENT BUY OR SELL THROUGH SAMPLE UNITS AVAILABLE FOR SALE.

Texas Instruments 580 DS10 Models 4, 6, etc; current T.I. maintenance
Systems — 1600, 2000, 2400, 2800, 3200, 3600, 4000, 4400, 4800, 5200, 5600, 6000, 6400, 6800, 7200, 7600, 8000, 8400, 8800, 9200, 9600, 10000, 10400, 10800, 11200, 11600, 12000, 12400, 12800, 13200, 13600, 14000, 14400, 14800, 15200, 15600, 16000, 16400, 16800, 17200, 17600, 18000, 18400, 18800, 19200, 19600, 20000, 20400, 20800, 21200, 21600, 22000, 22400, 22800, 23200, 23600, 24000, 24400, 24800, 25200, 25600, 26000, 26400, 26800, 27200, 27600, 28000, 28400, 28800, 29200, 29600, 30000, 30400, 30800, 31200, 31600, 32000, 32400, 32800, 33200, 33600, 34000, 34400, 34800, 35200, 35600, 36000, 36400, 36800, 37200, 37600, 38000, 38400, 38800, 39200, 39600, 40000, 40400, 40800, 41200, 41600, 42000, 42400, 42800, 43200, 43600, 44000, 44400, 44800, 45200, 45600, 46000, 46400, 46800, 47200, 47600, 48000, 48400, 48800, 49200, 49600, 50000, 50400, 50800, 51200, 51600, 52000, 52400, 52800, 53200, 53600, 54000, 54400, 54800, 55200, 55600, 56000, 56400, 56800, 57200, 57600, 58000, 58400, 58800, 59200, 59600, 60000, 60400, 60800, 61200, 61600, 62000, 62400, 62800, 63200, 63600, 64000, 64400, 64800, 65200, 65600, 66000, 66400, 66800, 67200, 67600, 68000, 68400, 68800, 69200, 69600, 70000, 70400, 70800, 71200, 71600, 72000, 72400, 72800, 73200, 73600, 74000, 74400, 74800, 75200, 75600, 76000, 76400, 76800, 77200, 77600, 78000, 78400, 78800, 79200, 79600, 80000, 80400, 80800, 81200, 81600, 82000, 82400, 82800, 83200, 83600, 84000, 84400, 84800, 85200, 85600, 86000, 86400, 86800, 87200, 87600, 88000, 88400, 88800, 89200, 89600, 90000, 90400, 90800, 91200, 91600, 92000, 92400, 92800, 93200, 93600, 94000, 94400, 94800, 95200, 95600, 96000, 96400, 96800, 97200, 97600, 98000, 98400, 98800, 99200, 99600, 100000, 100400, 100800, 101200, 101600, 102000, 102400, 102800, 103200, 103600, 104000, 104400, 104800, 105200, 105600, 106000, 106400, 106800, 107200, 107600, 108000, 108400, 108800, 109200, 109600, 110000, 110400, 110800, 111200, 111600, 112000, 112400, 112800, 113200, 113600, 114000, 114400, 114800, 115200, 115600, 116000, 116400, 116800, 117200, 117600, 118000, 118400, 118800, 119200, 119600, 120000, 120400, 120800, 121200, 121600, 122000, 122400, 122800, 123200, 123600, 124000, 124400, 124800, 125200, 125600, 126000, 126400, 126800, 127200, 127600, 128000, 128400, 128800, 129200, 129600, 130000, 130400, 130800, 131200, 131600, 132000, 132400, 132800, 133200, 133600, 134000, 134400, 134800, 135200, 135600, 136000, 136400, 136800, 137200, 137600, 138000, 138400, 138800, 139200, 139600, 140000, 140400, 140800, 141200, 141600, 142000, 142400, 142800, 143200, 143600, 144000, 144400, 144800, 145200, 145600, 146000, 146400, 146800, 147200, 147600, 148000, 148400, 148800, 149200, 149600, 150000, 150400, 150800, 151200, 151600, 152000, 152400, 152800, 153200, 153600, 154000, 154400, 154800, 155200, 155600, 156000, 156400, 156800, 157200, 157600, 158000, 158400, 158800, 159200, 159600, 160000, 160400, 160800, 161200, 161600, 162000, 162400, 162800,

Portable teleprinter 'a first'

WHAT is claimed to be the first portable teleprinter terminal using a dot matrix impact printer has been launched in the UK by Teleprinter Equipment, part of the CAE group.

The TE Victor 745 Portable uses plain and multi-ply paper, keeping operating costs to a minimum, but still costs less than most existing thermal printers on the market, says the company.

Teleprinter Equipment sees the unit as the first "wide-purpose" portable terminal allowing access to data communications system from any location. It comes in a moulded briefcase complete with adjustable acoustic coupler to fit all standard phone sizes, and hardware port for connection to an external modem.

In its briefcase with coupler the



The TE Victor 745 portable terminal

unit weighs approximately 20 lbs and measures 14 by 12 by 4½ inches. For printing the unit has 14 alternative type sizes which range from five to 20 characters an inch.

Before the unit's size does not restrict it from reproducing full 132 character columns.

A 30 cps printing speed is assured and, in the graphics mode, it

Gould releases its 'most powerful' 32-bit mini

GOULD SEL has launched in the UK its newest and most powerful super-minicomputer, the Gould Concept 32/8780. The new system is more than five times faster than closely priced competitor, claims Gould, and achieves its processing power from a combination of parallel processors with high-speed ECL technology and very large cache memories.

The parallel processors, the Central Processing Unit (CPU) and the Internal Processing Unit (IPU) work together to share the workload in a multi-stream environment. This enables the system to process two different instruction streams simultaneously and to handle more work in a given unit of time.

The CPU handles all I/O and interrupt processing, while the IPU handles compute tasks. Both processors have their own floating point hardware and are implemented with high-speed 10,000 series ECL technology chips.

The CPU and IPU possess very cache memories which enhance system performance by improving the cache "hit rate". The 32/8780 is provided with 32 Kbytes of 75-nanosecond cache memory in both the CPU and the IPU.

The second test of the 32/8780 used optimised code, and produced a 17.477 M Whs/sec. This represents a 262% improvement over the un-optimised run.

The company has also announced Quadribyte, a 32-bit board-set computer and the first Gould SEL product to be specifically developed for the OEM market.

Gould SEL (CW), Rafferty House, 2-4 Sutton Court Road, Sutton, Surrey SM1 4SY. Tel: 01-643 8020.

Rair launches top-end Black Box

RAIR has launched its top-of-the-range microcomputer system, the Rair Black Box Model 3/50. It has an increased running speed of nearly 70% over Rair's previous top-end machine, the Model 3/30.

The new model uses state-of-the-art 64K dynamic RAM on Rair's recently-announced full 256 Kbyte MOS memory board. These provide 256 Kbytes of high speed MOS memory on a single 10-inch by 4.5-inch board. By adding four such boards, the Model 3/50 expands to offer a one Mbyte of dynamic RAM high speed MOS memory.

In its standard mode the terminal displays all upper and lower case ASCII characters as well as all VT52 graphics symbols.

The VT52/APL has a serial asynchronous EIA RS232C compatible I/O port for communication with any computer, communications network or other peripheral unit.

Speed of operation can be selected at all the usual speeds up to 19,200 baud with full duplex operation either with or without local echo and using XON/XOFF protocol. An internal 32 character buffer is used to ensure that data can be transmitted at maximum speed without interruptions.

Hardware Dynamics (CW), 103 Colleton Drive, Twyford, Berks, RG10 0AX. Tel: (0734) 341916.

Keeping discs in order

A new system designed to help microcomputer users maintain their floppy discs in retrievable and filed order is available from MC2. Called the Safer disc storage system, the unit comprises housing with dividers, reference cards for word and data processing, and suspension filing for the storage of 5½-inch floppy discs.

Discs can be filed and numerically referenced against an index system in the front of the cabinet. The key to media protection is a mini suspension clip that holds the disc at once.

MC2 (CW), 262 The Broadway, London SW19 1SB. Tel: 01-540 9370.

DATA Dynamics has three service centres in the UK: one at Hayes (Middlesex), one at Manchester and one in Edinburgh. Faulty equipment is, whenever possible, repaired at a customer's location.

The full agreement will include all breakdown calls, replacement parts, labour and travelling costs (within the UK mainland).

Since the maintenance offered covers such a wide range of equipment, individual quotations will be given to customers supplying details of their equipment, model number, and age.

Data Dynamics (CW), Data House, Clayton Road, Hayes, Middlesex. Tel: 01-845 7781.

DATA Dynamics is introducing service and maintenance facilities for most terminal or microcomputer systems. The company will carry out routine preventative maintenance at regular intervals and offer an emergency breakdown service. In a bid to encourage customers to take out service contracts, the company will extend the normal six month warranty on new equipment to one year for just £30.

Data Dynamics has three service centres in the UK: one at Hayes (Middlesex), one at Manchester and one in Edinburgh. Faulty equipment is, whenever possible, repaired at a customer's location.

The full agreement will include all breakdown calls, replacement parts, labour and travelling costs (within the UK mainland).

Since the maintenance offered covers such a wide range of equipment, individual quotations will be given to customers supplying details of their equipment, model number, and age.

Data Dynamics (CW), Data House, Clayton Road, Hayes, Middlesex. Tel: 01-845 7781.

DATA Dynamics is introducing service and maintenance facilities for most terminal or microcomputer systems. The company will carry out routine preventative maintenance at regular intervals and offer an emergency breakdown service. In a bid to encourage customers to take out service contracts, the company will extend the normal six month warranty on new equipment to one year for just £30.

Data Dynamics has three service centres in the UK: one at Hayes (Middlesex), one at Manchester and one in Edinburgh. Faulty equipment is, whenever possible, repaired at a customer's location.

The full agreement will include all breakdown calls, replacement parts, labour and travelling costs (within the UK mainland).

Since the maintenance offered covers such a wide range of equipment, individual quotations will be given to customers supplying details of their equipment, model number, and age.

Data Dynamics (CW), Data House, Clayton Road, Hayes, Middlesex. Tel: 01-845 7781.

DATA Dynamics is introducing service and maintenance facilities for most terminal or microcomputer systems. The company will carry out routine preventative maintenance at regular intervals and offer an emergency breakdown service. In a bid to encourage customers to take out service contracts, the company will extend the normal six month warranty on new equipment to one year for just £30.

Data Dynamics has three service centres in the UK: one at Hayes (Middlesex), one at Manchester and one in Edinburgh. Faulty equipment is, whenever possible, repaired at a customer's location.

The full agreement will include all breakdown calls, replacement parts, labour and travelling costs (within the UK mainland).

Since the maintenance offered covers such a wide range of equipment, individual quotations will be given to customers supplying details of their equipment, model number, and age.

Data Dynamics (CW), Data House, Clayton Road, Hayes, Middlesex. Tel: 01-845 7781.

DATA Dynamics is introducing service and maintenance facilities for most terminal or microcomputer systems. The company will carry out routine preventative maintenance at regular intervals and offer an emergency breakdown service. In a bid to encourage customers to take out service contracts, the company will extend the normal six month warranty on new equipment to one year for just £30.

Data Dynamics has three service centres in the UK: one at Hayes (Middlesex), one at Manchester and one in Edinburgh. Faulty equipment is, whenever possible, repaired at a customer's location.

The full agreement will include all breakdown calls, replacement parts, labour and travelling costs (within the UK mainland).

Since the maintenance offered covers such a wide range of equipment, individual quotations will be given to customers supplying details of their equipment, model number, and age.

Data Dynamics (CW), Data House, Clayton Road, Hayes, Middlesex. Tel: 01-845 7781.

DATA Dynamics is introducing service and maintenance facilities for most terminal or microcomputer systems. The company will carry out routine preventative maintenance at regular intervals and offer an emergency breakdown service. In a bid to encourage customers to take out service contracts, the company will extend the normal six month warranty on new equipment to one year for just £30.

Data Dynamics has three service centres in the UK: one at Hayes (Middlesex), one at Manchester and one in Edinburgh. Faulty equipment is, whenever possible, repaired at a customer's location.

The full agreement will include all breakdown calls, replacement parts, labour and travelling costs (within the UK mainland).

Since the maintenance offered covers such a wide range of equipment, individual quotations will be given to customers supplying details of their equipment, model number, and age.

Data Dynamics (CW), Data House, Clayton Road, Hayes, Middlesex. Tel: 01-845 7781.

DATA Dynamics is introducing service and maintenance facilities for most terminal or microcomputer systems. The company will carry out routine preventative maintenance at regular intervals and offer an emergency breakdown service. In a bid to encourage customers to take out service contracts, the company will extend the normal six month warranty on new equipment to one year for just £30.

Data Dynamics has three service centres in the UK: one at Hayes (Middlesex), one at Manchester and one in Edinburgh. Faulty equipment is, whenever possible, repaired at a customer's location.

The full agreement will include all breakdown calls, replacement parts, labour and travelling costs (within the UK mainland).

Since the maintenance offered covers such a wide range of equipment, individual quotations will be given to customers supplying details of their equipment, model number, and age.

Data Dynamics (CW), Data House, Clayton Road, Hayes, Middlesex. Tel: 01-845 7781.

DATA Dynamics is introducing service and maintenance facilities for most terminal or microcomputer systems. The company will carry out routine preventative maintenance at regular intervals and offer an emergency breakdown service. In a bid to encourage customers to take out service contracts, the company will extend the normal six month warranty on new equipment to one year for just £30.

Data Dynamics has three service centres in the UK: one at Hayes (Middlesex), one at Manchester and one in Edinburgh. Faulty equipment is, whenever possible, repaired at a customer's location.

The full agreement will include all breakdown calls, replacement parts, labour and travelling costs (within the UK mainland).

Since the maintenance offered covers such a wide range of equipment, individual quotations will be given to customers supplying details of their equipment, model number, and age.

Data Dynamics (CW), Data House, Clayton Road, Hayes, Middlesex. Tel: 01-845 7781.

DATA Dynamics is introducing service and maintenance facilities for most terminal or microcomputer systems. The company will carry out routine preventative maintenance at regular intervals and offer an emergency breakdown service. In a bid to encourage customers to take out service contracts, the company will extend the normal six month warranty on new equipment to one year for just £30.

Data Dynamics has three service centres in the UK: one at Hayes (Middlesex), one at Manchester and one in Edinburgh. Faulty equipment is, whenever possible, repaired at a customer's location.

The full agreement will include all breakdown calls, replacement parts, labour and travelling costs (within the UK mainland).

Since the maintenance offered covers such a wide range of equipment, individual quotations will be given to customers supplying details of their equipment, model number, and age.

Data Dynamics (CW), Data House, Clayton Road, Hayes, Middlesex. Tel: 01-845 7781.

DATA Dynamics is introducing service and maintenance facilities for most terminal or microcomputer systems. The company will carry out routine preventative maintenance at regular intervals and offer an emergency breakdown service. In a bid to encourage customers to take out service contracts, the company will extend the normal six month warranty on new equipment to one year for just £30.

Data Dynamics has three service centres in the UK: one at Hayes (Middlesex), one at Manchester and one in Edinburgh. Faulty equipment is, whenever possible, repaired at a customer's location.

The full agreement will include all breakdown calls, replacement parts, labour and travelling costs (within the UK mainland).

Since the maintenance offered covers such a wide range of equipment, individual quotations will be given to customers supplying details of their equipment, model number, and age.

Data Dynamics (CW), Data House, Clayton Road, Hayes, Middlesex. Tel: 01-845 7781.

DATA Dynamics is introducing service and maintenance facilities for most terminal or microcomputer systems. The company will carry out routine preventative maintenance at regular intervals and offer an emergency breakdown service. In a bid to encourage customers to take out service contracts, the company will extend the normal six month warranty on new equipment to one year for just £30.

Data Dynamics has three service centres in the UK: one at Hayes (Middlesex), one at Manchester and one in Edinburgh. Faulty equipment is, whenever possible, repaired at a customer's location.

The full agreement will include all breakdown calls, replacement parts, labour and travelling costs (within the UK mainland).

Since the maintenance offered covers such a wide range of equipment, individual quotations will be given to customers supplying details of their equipment, model number, and age.

Data Dynamics (CW), Data House, Clayton Road, Hayes, Middlesex. Tel: 01-845 7781.

DATA Dynamics is introducing service and maintenance facilities for most terminal or microcomputer systems. The company will carry out routine preventative maintenance at regular intervals and offer an emergency breakdown service. In a bid to encourage customers to take out service contracts, the company will extend the normal six month warranty on new equipment to one year for just £30.

Data Dynamics has three service centres in the UK: one at Hayes (Middlesex), one at Manchester and one in Edinburgh. Faulty equipment is, whenever possible, repaired at a customer's location.

The full agreement will include all breakdown calls, replacement parts, labour and travelling costs (within the UK mainland).

Since the maintenance offered covers such a wide range of equipment, individual quotations will be given to customers supplying details of their equipment, model number, and age.

Data Dynamics (CW), Data House, Clayton Road, Hayes, Middlesex. Tel: 01-845 7781.

DATA Dynamics is introducing service and maintenance facilities for most terminal or microcomputer systems. The company will carry out routine preventative maintenance at regular intervals and offer an emergency breakdown service. In a bid to encourage customers to take out service contracts, the company will extend the normal six month warranty on new equipment to one year for just £30.

Data Dynamics has three service centres in the UK: one at Hayes (Middlesex), one at Manchester and one in Edinburgh. Faulty equipment is, whenever possible, repaired at a customer's location.

The full agreement will include all breakdown calls, replacement parts, labour and travelling costs (within the UK mainland).

Since the maintenance offered covers such a wide range of equipment, individual quotations will be given to customers supplying details of their equipment, model number, and age.

Data Dynamics (CW), Data House, Clayton Road, Hayes, Middlesex. Tel: 01-845 7781.

DATA Dynamics is introducing service and maintenance facilities for most terminal or microcomputer systems. The company will carry out routine preventative maintenance at regular intervals and offer an emergency breakdown service. In a bid to encourage customers to take out service contracts, the company will extend the normal six month warranty on new equipment to one year for just £30.

Data Dynamics has three service centres in the UK: one at Hayes (Middlesex), one at Manchester and one in Edinburgh. Faulty equipment is, whenever possible, repaired at a customer's location.

The full agreement will include all breakdown calls, replacement parts, labour and travelling costs (within the UK mainland).

Since the maintenance offered covers such a wide range of equipment, individual quotations will be given to customers supplying details of their equipment, model number, and age.

Data Dynamics (CW), Data House, Clayton Road, Hayes, Middlesex. Tel: 01-845 7781.

DATA Dynamics is introducing service and maintenance facilities for most terminal or microcomputer systems. The company will carry out routine preventative maintenance at regular intervals and offer an emergency breakdown service. In a bid to encourage customers to take out service contracts, the company will extend the normal six month warranty on new equipment to one year for just £30.

Data Dynamics has three service centres in the UK: one at Hayes (Middlesex), one at Manchester and one in Edinburgh. Faulty equipment is, whenever possible, repaired at a customer's location.

The full agreement will include all breakdown calls, replacement parts, labour and travelling costs (within the UK mainland).

Since the maintenance offered covers such a wide range of equipment, individual quotations will be given to customers supplying details of their equipment, model number, and age.

Data Dynamics (CW), Data House, Clayton Road, Hayes, Middlesex. Tel: 01-845 7781.

DATA Dynamics is introducing service and maintenance facilities for most terminal or microcomputer systems. The company will carry out routine preventative maintenance at regular intervals and offer an emergency breakdown service. In a bid to encourage customers to take out service contracts, the company will extend the normal six month warranty on new equipment to one year for just £30.

Data Dynamics has three service centres in the UK: one at Hayes (Middlesex), one at Manchester and one in Edinburgh. Faulty equipment is, whenever possible, repaired at a customer's location.

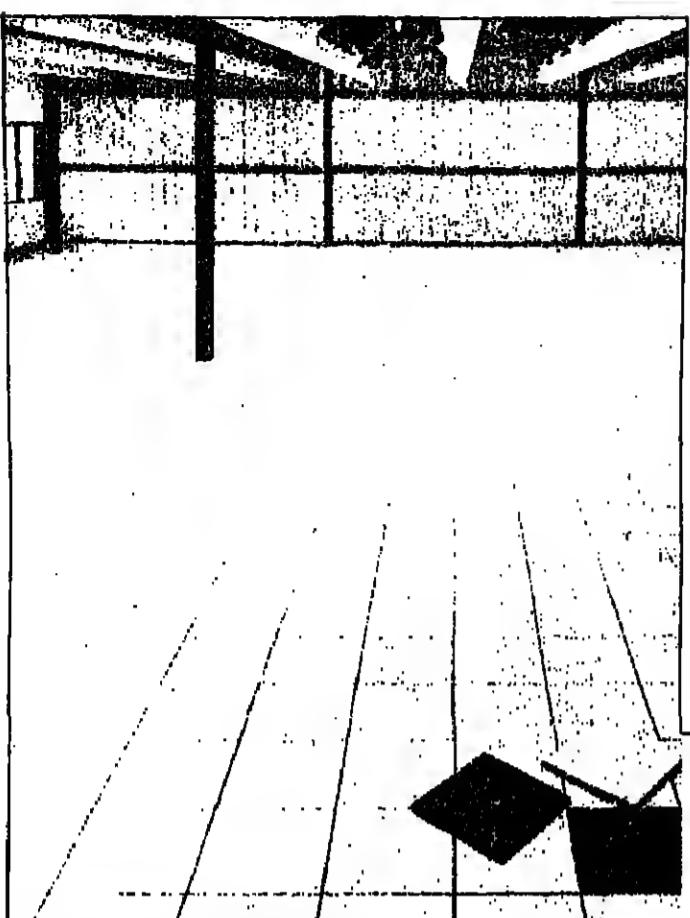
The full agreement will include all breakdown calls, replacement parts, labour and travelling costs (within the UK mainland).

Since the maintenance offered covers such a wide range of equipment, individual quotations will be given to customers supplying details of their equipment, model number, and age.

Data Dynamics (CW), Data House, Clayton Road, Hayes, Middlesex. Tel: 01-845 7781.

DATA Dynamics is introducing service and maintenance facilities for most terminal or microcomputer systems. The company will carry out routine preventative maintenance at regular intervals and offer an emergency breakdown service. In a bid to encourage customers to take out service contracts, the company will extend the normal six month warranty on new equipment to one year for just £30.

Data Dynamics has three service centres in the UK: one at Hayes (Middlesex), one at Manchester and one in Edinburgh. Faulty equipment is, whenever possible, repaired at a customer's location.



Is inadequate back-up giving you a false sense of security?

by John Kavanagh

THERE is something about computer cables that mice find irresistibly tasty. They revel in the wide open spaces beneath the computer room's false floor, nibbling at the cable coverings until one gorges its way right through to the wire.

The result is a little fury rodent with its legs in the air - and a string of disc drives or a complete computer system dying suddenly in mysterious circumstances.

This scene is painted by Stephen Hitchcock, marketing manager at Unilever Computer Services (UCSL), to show that although data processing managers might

think they are safe with their standby generators and fire extinguishing equipment there are 101 unexpected little things that can bring a complete installation to a standstill.

Lossing the computer can almost be as frighteningly final as having a life support system switched off, says Hitchcock. A US survey shows that if a financial institution such as a bank loses its data centre it can continue to run its essential functions for just two days.

In other words, if the computer centre is burnt down on Monday the company could be out of business by Wednesday. Banks are special cases - but the survey also shows that the average for all industries is less than one week.

Although there is greater awareness of the need for standby facilities, too many installations are in danger of being caught out by "totally inadequate" arrangements, says Hitchcock.

The most common arrangement

is the frozen standby. This is where two companies near to each other and with similar configurations enter a mutual aid agreement.

Hitchcock dismisses such arrangements completely: "This is useless because anyone with a well-organised installation is going to be using expensive capital equipment to the full. It just won't have spare capacity to help out its neighbour.

It is really going to take on half or even a quarter of its partner's work for weeks on end if there is a disaster."

"This is a totally superficial solution. All it provides is a false sense of security."

Another arrangement, the cold standby, involves portable or static air-conditioned computer rooms without computers. Some organisations have their own, others have contracts with companies offering static computer rooms complete with standby generators, modems and furniture or portable rooms, erected within a week.

The advantage here is low cost: an "insurance premium" of up to £7,000 a year.

But Hitchcock points to a disadvantage: "Equipment manufacturers usually bend over backwards to provide replacement machines but it still generally takes between two and six weeks. By that time you can be out of business."

A warm standby arrangement is like a conventional time sharing bureau service. When disaster strikes the user can get on the machine quickly but only gets a share in a remote machine run by another company, without total control over the workload or security. The equipment configuration is unlikely to match user requirements exactly.

"This is fine for running one or two standalone applications, for coping with workload peaks and for conversion in readiness for a new machine. But it isn't a solution to a disaster," says Hitchcock.

Some companies have gone the whole hog and installed exact copies of their production mainframes and peripherals as standby machines. "This is great - but to keep costs down they put the two machines in the same building, usually in the same computer room," says Hitchcock. "We call this 'burnt' standby because if the main computer goes up in smoke so does the back-up machine."

Bureaux like UCSL claim to offer a "pleasantly hot" service. UCSL's is an immediate standby service to IBM users in the form of fully equipped computer centres, complete with large, "empty" mainframes.

Members of the UCSL Back-up Club which are hit by disaster

mount their own operating

systems and applications software,

configure the equipment as they

wish and run the installation them-

selves. The arrangement is part of

UCSL's standard bureaux service.

Hitchcock further claims UCSL's service is unique as the company constantly upgrades its

machine configurations in line

with changes made by the Back-up Club members at their own instal-

lations.

In addition, UCSL was one of the first customers of British Telecom's new Overlay digital transmission service, which guarantees very fast connection of high-speed data and voice communications.

With a hot service the customer's staff can go to the standby site as soon as a disaster strikes and simply take it over. Live systems

can be running as soon as operators arrive and load their operating system and programs. The centres normally include furnished offices with telephones, communications equipment and in some cases local display terminals and printers.

UCSL encourages customers to take the disaster business very

seriously. They must have specific procedures covering everything from the periods at which files are copied to the naming of the person responsible for telephoning for the standby service if it is needed.

UCSL's service has been set up in response to a new attitude towards back-up, sparked off by the extension of computing to all parts of many companies, according to Hitchcock.

"Three-quarters of the installations we talk to are now seriously concerned about standby because they see that more and more departments are coming to rely on computing in their day-to-day operations," he says.

"The ultimate is where the chairman gets his own colour graphics terminal. This is something of a body blow to the community of data processing managers because every time it hardware hiccups the chairman knows."

However, the hazards have not changed much over the year. They range from hardware and air-conditioning failure to floods, terrorist sabotage and aviation disasters. In between there are vandalism by staff or outsiders, structural damage to the building, perhaps caused by renovation or vibration from a busy road nearby, a fire caused by carelessness in a stationery store or operators' room, or industrial action by com-

puter staff or suppliers.

"The board of directors is tended to regard machine room collapse as coming from a Hollywood-type epic disaster, with a probability equally remote," says Hitchcock.

"But computers are immensely sensitive creatures and it is the silly little things that cripple them: a leaky roof, a broken fan belt on the standby generator, a leak in the IBM mainframe cooling system - or a hungry mouse."

"Every quarter we spend 10 days on a full boat-drill at each Back-up Club member. And if they get a new version of the operating system or tinker with it themselves they are obliged to come and test it on our equipment. We've been in the bureaux business for 13 years and we know just how much the business depends on top-flight contingency procedures."

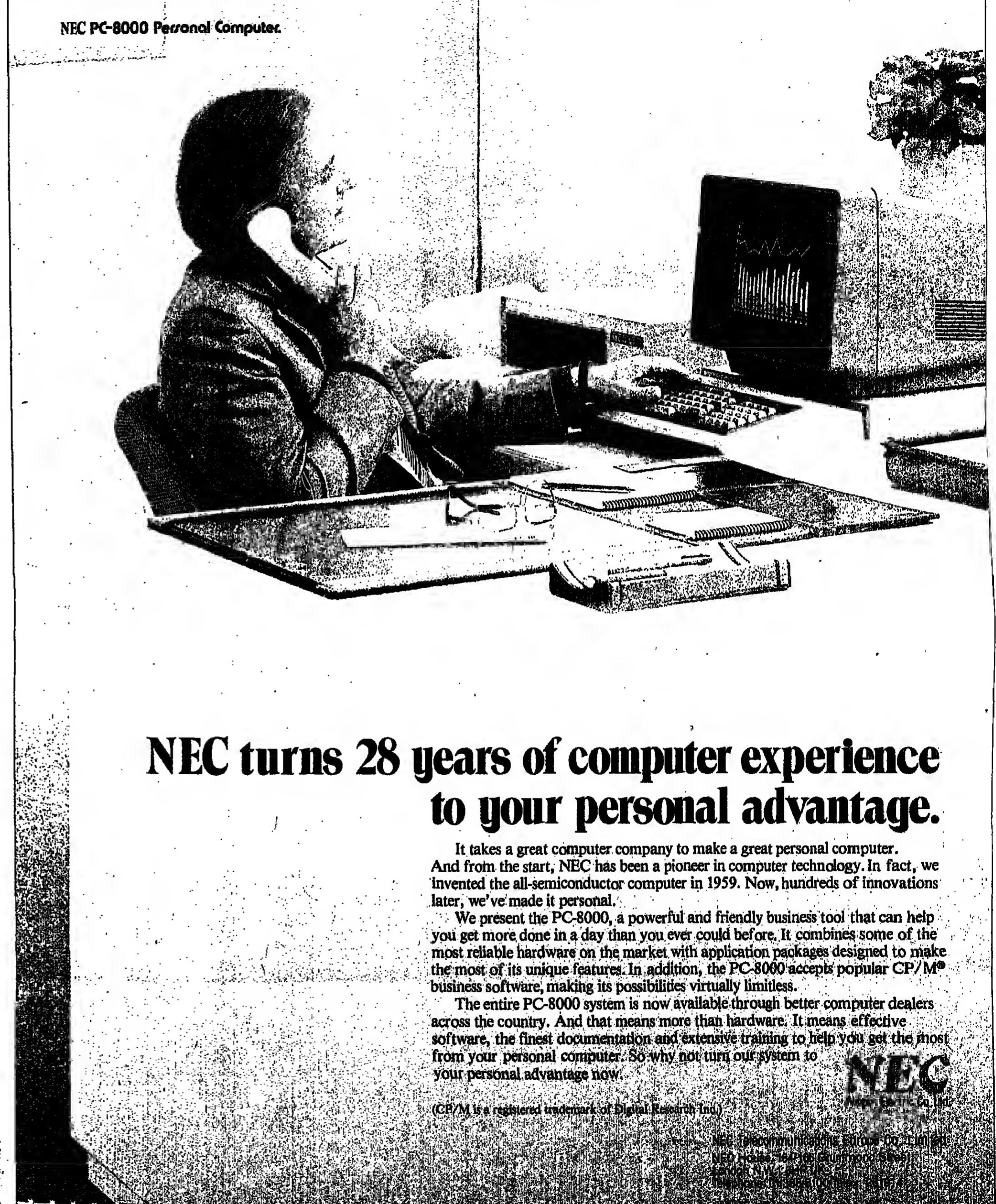
Hot services cost around £20,000 a year. "One of the big building societies has said that its computer centre was burnt down it would lose customers from day one," says Hitchcock. "And those customers would be lost forever."

"Any big company will lose millions of pounds a day. With no back-up they will probably be forced to get substantial cuts in their premium payments to their insurance companies."

UCSL is increasing the number of standby computer centres in line with the rise. But Hitchcock is still trying to convince large experienced installations which believe remain self-sufficient their standby arrangements take on the service.

"Every 30 minutes somewhere in the UK a crucial computer bursts into flames, sinks beneath a grimey flood of water or gets into a humiliating standstill," he claims. "While IBM, ICL and the others strive to give more bang per buck, it's all rather pointless when a fuse blows and suddenly the computer goes up in smoke."

"And it's no good just putting



NEC PC-8000 Personal Computer

Write for more information about the NEC PC-8000.

NAME _____

COMPANY _____

ADDRESS _____

Computer Weekly

TOP JOBS

Announcing a new prestigious section for senior level computer appointments

Computer Weekly is to introduce a new feature into the appointments section of the newspaper to accommodate senior level appointments with a basic minimum salary of £16k. The new section will be headed "Top Jobs" and will start with issue of September 9.

Computer Weekly carries a large volume of appointment pages every week. Now a special section for senior appointments will enable readers to locate suitable job opportunities more conveniently. At the same time, this new facility will provide advertisers with the option of securing a premier position without extra cost.

One of the special but important features of this new section is that only those jobs offering a basic minimum salary of £16k will be eligible for inclusion in "Top Jobs". This restriction will add considerable prestige to the section and the positions advertised.

Computer Weekly provides the most comprehensive news coverage of computer users and the computer industry. Surveys have shown the newspaper to be the most widely read computer publication in Britain. With a circulation of over 100,000 every week - 32% at senior/managerial level - Computer Weekly is your best choice for all computer vacancies, as well as those important Top Jobs.

Because of the strict salary level restrictions we are enforcing, and the subsequent advanced production arrangements necessary, all space reservations for the "Top Jobs" section must be received in London by 4pm Friday before publication date.

To reserve space please phone Shobhan Gajjar (Direct Clients) or Julie McNally (Consultancies) on (01) 661 0121.

* Circulation ABC January-June 1982 - 100,263

Computer Weekly

Classified Department, Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS

NEC

Field Service Engineers CAD/CAM Systems Support, Thames Valley and Gloucestershire locations

Racal-Redac Ltd is Europe's leading supplier of computer aided design systems and in the field of CAD design is acknowledged to be the world's No.1 company. We are continually extending and expanding our product range to cover a wide range of application areas including our PCB layout, mechanical design and ILLA/VLSI design.

Our Field Service Department provide a fast and efficient installation, repair and maintenance service to our UK customers and due to an increasing number of installations we are now seeking to appoint additional Engineers based in Gloucestershire and the Thames Valley. The Engineer who will be appointed in the Thames Valley will initially provide full



Racal-Redac
THE INTERACTIVE SYSTEMS PEOPLE

World leaders in electronics

RACAL

Analyst Programmers

Here at Brown & Root (U.K.) Limited, world leaders in the design and construction of offshore oil and gas production facilities, we are seeking Analyst/Programmers to develop a variety of new systems working with the latest software aids and database techniques. Candidates, male or female, will be qualified to degree level and ideally have a minimum of four years commercial applications programming experience gained within the Engineering or Construction industries. Experience of VAX 11 series minicomputers, IBM 370, DATATRIEVE, FMS, INFO and



Brown & Root (U.K.) Limited

© Halliburton Company

1

2

**SOUTH GLAMORGAN COUNTY COUNCIL
EDUCATION DEPARTMENT**
**COMPUTER RESOURCES ASSISTANT
(ADMINISTRATIVE SYSTEMS)**
AP3 £5652-£6333 p.a.
Required by the South Glamorgan Institute of Higher Education in the Management Information section. White collar with all administrative computing experience. Preferred candidates should be competent in COBOL programme with systems analysis and design experience. He/she must be capable of working with the minimum of supervision and have the ability to liaise with staff at all levels. The post offers a challenging and stimulating environment and responsibility for management information systems on a PRIMER 500. The post holder will operate mainly from the Cyncoed Centre, but have significant involvement with all centres and the Computer Unit at Llandaff, Cardiff.

Pay Award Pending. Requests for application forms (accompanied by a stamped addressed envelope) to the Personnel and Management Services Department, D.C. 100, 10th Floor, Newport Road, Cardiff. Tel 022-409022 Ext. 3411/2 to be returned by 10th August, 1982. (Ref. A82-1000)

SCIENTIFIC ANALYST/PROGRAMMERS AND PROGRAMMERS

Various companies situated mainly in Central London and some in the Home Counties are seeking experienced and trainee Scientific Analyst/Programmers and Programmers. Applicants must have a good numerical degree and experience of FORTRAN and BASIC programming languages gained in scientific/engineering applications on DEC VAX 11/780 or ICL mainframes. Interactive Graphics experience from an engineering environment would be particularly useful for some positions. Some ICL FORTRAN positions also available.

Salaries will depend on experience.

Please write with details of experience or phone for an Application Form to AMES PERSONNEL, 8 Chert Way, Reigate, Surrey. Tel. Reigate (0732) 22218.

(0732)

SYSTEMS ANALYST/ PROGRAMMER

NEW MELDEN COMPANY CAR

To join an expanding team engaged upon "in-house" development of integrated micro-based systems within this international construction group.

Knowledge of the construction industry would be desirable. Several years' programming experience is essential.

We offer a negotiable salary together with a company car or car allowance. Pension scheme membership with free life assurance, subsidised private medical insurance, subsidised canteen and 24 days' annual leave.

Please write or telephone for an application form to:

R. J. Howard, Group Personnel Manager
Higgs and Hill PLC
Crown House, Kingston Road
New Melden, Surrey KT3 3ST
Telephone: 01-842 8821

HIGGS AND HILL
Our jobs are open to persons of either sex and this advertisement should be construed accordingly.

FOR
CLASSIFIED
ADVERTISING USE
DIRECT
LINE
01-661 0121

IMMEDIATE CONTRACTS
IBM Cobol A0F/IMS Amtl/progs; October - 6 months
IBM Adabas Natural Prog. & A/P, London/Holland
Mark IV IBM JCL Prog. with TSO/SPF - 6 months
IBM Cobol on-line Dos/Prog., Geneva - 6 months
Knight CONTACT JUNE MORLEY 01-441 1401
14 Old Park Lane, London W1 4RL

SYSTEMS PROGRAMMERS...

... who are available now or in the near future are invited to contact Carol Evans at our International Headquarters in Egham, Geoff Mackenzie in Croydon, or Peter Moore in Manchester to discuss a variety of interesting and rewarding assignments throughout the UK and overseas.

P-E Computer Services Limited

Park House, Wick Road, Egham, Surrey
Winchester House, Fonthill Street, Manchester M2 2RZ Tel 061-228 2728
Lennig House, Moxons Avenue, Croydon, Surrey CR0 1KS Tel 01-680 7553

(Most of our employees wish they had joined earlier)

NORTHERN AREA SALESMAN

ANALYSTS AND PROGRAMMERS - COBOL

Join our team in SAUDI ARABIA you'll be in good company

Working in Saudi Arabia can be a very good life if you work with the right company. A company which appreciates the very best talent from the UK and will reward successful applicants with the highest salaries and benefits; the best living conditions and the opportunity to work on the most sophisticated DP equipment. The experience you gain will keep you ahead, and your talents will always be needed — wherever you work.

COMCAP in conjunction with their Saudi Agents are highly experienced in the business of recruiting high level computer people to work in Saudi Arabia. Because of this, they have been retained to act on behalf of a leading multi-national company that boasts one of the most sophisticated DP Centres in the Middle East — so you can be certain you will be well advised and well looked after. We call this "COMCAPABILITY" — our Competence and your Capability.

If you want to discuss the fabulous opportunities (listed below) in more detail, call Peter Madams on 01-723 4053.

**1 YEAR RENEWABLE
CONTRACT. SINGLE
STATUS.**

**FREE TRANSPORTATION
AND MEDICAL COVER.**

**FREE ACCOMMODATION
IN COMFORTABLE VILLAS
— fully equipped — T.V.,
showers, air conditioning, etc.**

**GENEROUS PAID
HOLIDAYS.**

MAJOR TAX CONCESSIONS

**SUPERB RECREATION
FACILITIES — swimming
pool, squash, tennis, etc.**

TRAINING CONSULTANTS - PROGRAMMING

Required Skills: At least 3 years Commercial Cobol experience in one or more of the following areas:

- a) MVS JCL TSO/SPF
- b) 4300 DOS CICS
- c) Financial or Payroll experience

SALARY TO £25K

ANALYSTS AND PROGRAMMERS PL1 or MARK IV

Required Skills: At least 3 years experience. PL1 IMS DB/DC — ADF desirable, or Mark IV TSO/SPF or SAS. Experience of Commercial Systems particularly Financial or Payroll will be useful.

SALARY TO £25K

COMCAP RESOURCES LTD.

26 Chilworth Street, London W2 8DT

01-723 4053

(24 hour answering service)

JCL WRITERS

Required Skills: MVS JCL Writers for Conversion and Automated Scheduling project. Systems programming background desirable.

SALARY TO £21K

TECHNICAL PROGRAMMERS PL2 - FORTRAN

Required Skills: MVS JCL TSO/SPF VSAM. Knowledge of Minicomputers and experience in Engineering, Graphics or Operations Research.

SALARY TO £28K

SYSTEMS PROGRAMMERS

Required Skills: At least 3 years Systems Programming with experience in ACF 2 or Computer Security Systems. The work will involve the evaluation, co-ordination and development of Security Systems for Distributed Computer environments using ACF 2. Experience of user training would be useful.

SALARY TO £30K

Ramtek

Spelling Test

Join the DP team at one of Saudi Arabia's latest hospitals

Senior Analyst/Programmer
c.£20,000 p.a. tax-free

Analyst/Programmer
c.£16,000 p.a. tax-free

Any major new hospital needs extensive computing facilities to ensure smooth, efficient day-to-day running, and to make a big contribution towards the quality of patient care.

And that's certainly true of the major new hospital on Saudi Arabia's west coast which is being managed by International Hospitals Group (IHG) the British health care organisation.

Working closely with the Chief Systems Designer, you'll become closely involved in systems analysis and design for a wide range of information, medical records, inventory control and general management systems, all of which will be handled on the hospital's PDP 11/70 kit, operating under RSTS/E.

The senior role will also involve the leadership of a small programming team.

For this role, you'll need at least five years experience as a programme, and you should have already completed some systems design projects.

For the Analyst/Programmer appointment, the required experience is two years programming, involving some systems design work.

You will ideally have worked with PDP 11/70 kit, and have experience of coding in BASIC PLUS. Academically, you should hold a degree or equivalent qualification.

Tax-free salaries will be paid in Saudi Riyals, and have been effected at the rate of SR 6.00 = £1. The extensive range of benefits includes free accommodation, 49 days annual holiday, free return flights to the UK, and free medical care. Facilities include shops, gymnasium, theatre, swimming pool, tennis courts and restaurants.

Preference will be given to Saudi Arabian nationals and Arabic speaking personnel.

For further details telephone Alexander Sneddon on 01-574 5432 or send your c.v. to him at IAL, Aeradio House, Hayes Road, Southall, Middlesex, UB2 5Nj. Please quote Ref. M450.

THE SANMED HOSPITAL PROJECT: KEY FACTS

The hospital:
A new 500 bed hospital for the care of the Saudi Arabian National Guard and their dependents, currently operating up to a capacity of 150 beds.

Designed, constructed and equipped to the highest international standards, both functionally and technically. As a modern secondary referral hospital it provides the best standard of medical and nursing care.

Advanced Technology:
Incorporating some of the most advanced medical equipment together with centralised computer systems for Patient Management, Patient Care and Hospital Administration.

MEDICAL SERVICES

COMMUNICATIONS SYSTEMS
COMPUTER SYSTEMS AND SERVICES
AVIATION SYSTEMS AND SERVICES-WORLDWIDE

COMMUNICATIONS CONSULTANT £16-18,000+Car

Already established as a major innovative force in systems consultancy and implementation, our client is now poised for rapid expansion within the communications sector.

Working within the framework of a newly-formed specialist team, the Consultant will evaluate and specify a variety of customer networks whilst taking responsibility for shaping the company's own communications product strategy.

The role requires broad-based expertise in modern voice and data transmission methods and your experience must therefore cover:

- Local Area Networking
- Packet-Switching (X25, X75)
- Synchronous/Bi-Synch Protocols
- CCITT Standards

This is a greenfields opportunity providing excellent career prospects in a forward-thinking and dynamic organisation based in the rural Home Counties.

For further details please telephone Ken Allwright on Windsor (07535) 50155 or write in strict confidence to Kramer Westfield Associates Ltd., St Peasod Street, Windsor, Berks, SL1 1EA.

Kramer Westfield

CONTRACTS

ADABAS/NATURAL
VAX/DATATEIVE
VAX/FORTAN (SYB, PROG.)
IBM/MVS, PROG.
SYB, PROG., SYB, PROG.
DATABASE & COMMUNICATIONS (IBM USEFUL SENIOR CONSULTANTS)
UNIVAC/FORTAN
MVS/COBOL/DCP/JACKSON
DOS/COBOL
PRIME COBOL
IBM/MVS - BOS
IBM/MVS/IV
IBM/MVS/APL
PDP/RTT11/FORTAN
VAX/CORAL 88
IBM BYS-34 (OVERSEAS CONTRACT)

ESSEX
MONTRAL ASSOCIATES SYSTEMS LTD.
68/100 HIGH ROAD, ILFORD, ESSEX IG1 1DD
01-853 2944 (4 Lines) - Emp. Agy.

ANALYSTS AND ANALYST/PROGRAMMERS (IBM AND PDP)

C. £11K + Overseas Train

An opportunity has arisen for self-motivated individuals to join an extremely successful and expanding company as an ANALYST or ANALYST/PROGRAMMER in the overseas division.

Successful candidates should have at least 4 years' commercial/financial experience including 2 years' Analyst in either a large IBM or PDP installation.

The positions would be of interest to ASSEMBLER and BASIC Applicants who wish to undertake key roles within a young progressive environment. Any expertise in Teleprocessing and MACRO Programming would be an added advantage.

In addition to early overseas travel, the company offers outstanding working conditions combined with substantial benefits.

To find out more, call SHIRLEY FRANCIS on 01-495 7111 or 01-642 2938 (Evenings) Quoting Ref. SAF 6223.

HUDDERSFIELD POLYTECHNIC
Department of Computer Studies and Mathematics
SENIOR LECTURER/LECTURER II

Ref. ACA/484
Computing /Information Systems

The principal degree and diploma courses within the Department involve major studies of applications of computers in business, industry and public authorities.

Applicants should have appropriate practical experience of computer-based information systems in areas such as applications/systems programming, systems design/networks. A good Honours Degree and/or MSc is essential.

Staff are expected to undertake activities, including research, in addition to teaching duties.

Salary: £8,172/£11,864 (Bar) £12,818
£13,888-£11,022

Further details and application forms are available from the Personnel Office, The Polytechnic, Queensgate, Huddersfield HD1 3DH. Tel: 0484 22280 ext 222, and should be returned no later than Thursday, 8 September, 1982.

YOUR APPLICATION FORM IS YOUR FIRST INTERVIEW

DEPARTMENT OF COMPUTING SERVICES

PROGRAMMER FOR MICROCOMPUTER SUPPORT

(6444-27876)

Because it's you. It is your life. Your education, career achievements. It has to impress and inform your future employer. It should be properly considered and well laid out. Most of all it must get you the job you want.

For free information explaining how we will do this for you please write to me at the address below.

Mr Richard Great, Confederation of British Industries, 20 Lissom Grove, London NW1.

Further details and form of application available from the Staff Office, Burton Street, Nottingham NG1 4BU. Closing date 14 September 1982.

(0622)

FOR
CLASSIFIED
ADVERTISING USE

DIRECT
LINE
01-561 1111

(0622)

THE TRENT
POLYTECHNIC
NOTTINGHAM

You're not looking for just another job;
we're certainly not looking for just another body!

NOT JUST A JOB ADVERT

It may be that you share our concern for the following things:

- Using up-to-date equipment
- Making it work well
- New and worth-while applications
- Creating user satisfaction
- Recognition of success
- Justifiable pride in the end product of your efforts

If this list rings some bells with you, then we could both be talking about the same thing: a career.

TRIAD is now a well-established group of computer people providing a broad range of services - mostly to blue chip organisations. Recent applications include the monitoring of weather information, control of a whisky bottling plant, robotics, information retrieval on microcomputers and an exciting range of commercial applications. In TRIAD you would have ample opportunity to develop further both in terms of personal responsibility and in terms of the technical nature of your work.

We need project leaders - and others - of proven experience.

It is not very important where and how that competence is evidenced: if you haven't worked on the machines and applications that we currently use then we would expect to retrain you.

Starting salaries are up to £14,000 per annum plus significant benefits.

If you are interested please contact:

Erwin Schneider
TRIAD Computing Systems Limited
42 Kingsway
London WC2B 6EX
01-831 7211

Offices in London and Guildford

TRIAD

Computer Weekly

reaches more
Systems Analysts than
its nearest competitor

Hampshire Based Systems House

Senior Systems Analysts

Salary to £13,000 + Benefits
including relocation where appropriate

Our client, a fast-growing systems house, part of a major industrial group, wishes to recruit a number of Senior Systems Analysts to join teams developing systems for prestige companies operating in the European Manufacturing and Distribution sector. The projects involve large scale interactive systems using database techniques and operating on the Digital Equipment VAX range of hardware. Career development prospects are excellent.

We are seeking committed, ambitious professionals who have the background and potential to meet the challenge of a fast-expanding operation. Age is less important than the ability to show a successful track record in manufacturing and distribution systems development with either a systems house, a manufacturer or a large user. You are likely to be a graduate or equivalent, enjoy the challenge of solving problems in a demanding client/consultant environment, and looking for a significant opportunity to advance your career based on personal performance.

Salaries are attractive and opportunities are available for promotion to grades which carry a company car.

To apply: Please contact Brian Parfitt.

Ferguson Thorley Bowles
Associates Limited

International Personnel Consultants
15 Clarence Street, Slough, Berkshire TW8 4JU
Telephone: 0708 592471 Telex: 881414

SYSTEMS ANALYSTS

CONTRACTORS

Register now for your next assignment

URGENT REQUIREMENTS

IBM

IBM MVS/VG1 + DATABASE EXP
IBM ADABAS NATURAL PL/I COBOL

IBM SYSTEM 38 RPG3

IBM OS/IVM/S/STI PL/I (OR ASSEMBLER)
IBM SYSTEM 38 RPG CCP
IBM SYSTEM 38 RPG3
IBM RPG2 MAAPICS
IBM APL
IBM SYS 34 WITH RPG11 (SEPT.)
IBM 4331 ME/VSE COBOL CICS

PROGRAMMERS
SYSTEMS SOFTWARE SUPPORT
SENIOR ANALYST/PROGRAMMERS
PROGRAMMERS
PROGRAMMERS
ANALYST/PROGRAMMERS
ANALYST/PROGRAMMERS
ANALYST/PROGRAMMERS
ANALYST/PROGRAMMERS

ICL

ICL SYSTEM IC ASSEMBLER
ICL 2900 VME/B GEORGE 3 IDMS
ICL 2900 VME/B IDMS COBOL
ICL ME29 RANGE COBOL TME MTS
ICL 290C VME/B GEORGE 2 IDMS

ANALYST/PROGRAMMERS
PROGRAMMERS
PROGRAMMERS
ANALYST/PROGRAMMERS
PROGRAMMERS

DEC + OTHERS

DEC 11/70 RSX 11/M BASIC +2
DEC 11/70 RSX BASIC +

TEAM LEADERS
PROGRAMMERS
ANALYST/PROGRAMMERS
ANALYST/PROGRAMMERS

INTEL AS5 OS/MVS RAMIS/COBOL
Z80 ASSEMBLER

PROGRAMMERS
PROGRAMMERS

HEWLETT PACKARD 6000 ALL ROUND EXP
DEC 11 + AIMS
UNIVAC 1100 EXC 8 COBOL
BURROUGHS 1800 MCP GENOS/IMS2 COBOL
BURROUGHS 6800 DMS 2 GENOS COBOL
DATAPORT DATABSHARE

ANALYST/PROGRAMMERS
ANALYST/PROGRAMMERS
ANALYST/PROGRAMMERS
ANALYST/PROGRAMMERS
ANALYST/PROGRAMMERS

SAUDI ARABIA

IBM MARK 4/40 TSO
IBM PL/I/IMS DB2/DC ADP
IBM PL/I/IS/DB2/40 TSO/SPF
IBM PL/I/IMS DB2/40 TSO/SPF

PROGRAMMERS
ANALYST/PROGRAMMERS
PROGRAMMERS
ANALYST/PROGRAMMERS

U.K. VIA L.A.

1. Support Engineer - Ref: MR1076

To work as part of a team maintaining a telephone exchange simulation system. 3 years plus knowledge of digital equipment is essential and analogue experience would be useful. Possibility to move ultimately into design applications exists.

2. Design Engineer - Ref: MR1077

To work as part of a team developing a local area network system. The successful candidate will have particular responsibility for the development of device interfaces, e.g. terminals and controllers. Ideally a minimum of 3 years' experience in microprocessor applications, preferably with some software knowledge, should be held and also, candidate should be willing to become involved in writing software using both high and low level languages. Software training will be provided where required.

3. Senior Technical Author/Supervisor - Ref: MR1067

To be responsible for a team of three writing User Design manuals for telecommunications applications. The successful applicant will have several years' background in either software or electronics together with sound writing and supervisory experience. He should also have the aptitude to promote technical publication services within the company.

4. Software Engineers - Ref: MR1079

To work on a variety of new projects with a rapidly expanding minicomputer manufacturer. Applicants should have a minimum of 3 years' experience, together with an enthusiastic and committed approach to software development.

5. Technical Authors - Ref: MR1054/5

To write User Manuals for the above client (41) and as part of a small select team. Junior positions require a minimum of 2 years' writing experience, preferably within a software environment. However, consideration will be given to programmers with a flair for writing. Senior positions require a minimum of 4 years' experience. Successful applicants will be expected to work largely on own initiative although, of course, whilst liaising with other team members and technical staff.

6. Training Officers/Instructors - Ref: MR1075

Here our client, an independent training organisation, requires instructors for both their Manchester and London centres. Applicants need not be already involved in training but, must have experience in one of two areas:

- a) Circa 5 years in Systems/Business analysis - covering commercial DP, including Systems Investigation, Analysis and Design
- b) Circa 3 years pure programming w/ some analysis content - covering commercial programming, mainly Cobol, in an IBM or similar batch-oriented environment.

These positions require applicants to be well presented and mature in outlook and should appeal to those who enjoy the communication and problem-solving aspects of training.

7. Electronic Engineers - Ref: MR1078

To work on a variety of Marine projects. Applicants should have a minimum of 2 years' experience of product design and be prepared to work as part of a team. Opportunities for further training exist.

Outline above is a selection of requirements in UK of time of going to Press. New ones constantly arise so, if you have expertise to offer in absolutely ANY field connected with Data Processing and/or Electronics please submit your career resume to the address below... as we may well then already have the career opportunity you seek, in UK or Overseas

WRITE OR TELEPHONE NOW

Edith Watson Recruitment Consultant,
Industrial Artists Limited, 21 Buxton Road, Ilford, Essex,
Tel: (01623) 57411 (Day) or (0234) 461000 (Evening)

IA is a registered Employment Business licensed by D.E.E.

Available for direct contract

ANALYST/PROGRAMMER

10 years' computing experience, plus degree. References and guarantees available.
Telephone (0223) 467848 for D.E.E. and details
(NO AGENCIES PLEASE) (0700)

TEMPORARY LECTURER IN COMPUTING

One-year full-time post starting September 1st, 1982. Person required to teach on courses including NCC Three National Diploma in Computing; Industrial experience preferable; a knowledge of COBOL an advantage. Salary within range £5,365-£8,267 depending on qualifications and experience.

Details (send a s.a.e.) from Mr. Principal,

Filton Technical College,

Filton, Bristol BS12 7AT.

METROPOLITAN BOROUGH OF KNOWSLEY PROJECT LEADER

PO1-5 28891-29983

Applications are invited from experienced systems analysts for this post in the Computer Section of the Metropolitan Borough of Knowsley. The successful applicant must be a member of the Executive's Office. The successful applicant must be a member of either British Computer Society or Management Services Institute.

The insulation consists of both an ICL 2900 and an ME29 computers using DME, TME, and PL/I. The successful applicant will be mainly responsible for the development of office information systems, including word processors, ICL 7502 equipment, and PL/I. Experience of office procedures and word processing will be welcomed.

Application forms from the Director of Management Services, Metropolitan Borough of Knowsley, 129, 17X, Tel: 061-942 1111. They should be returned not later than

ANALYSTS AND PROGRAMMERS

UP TO £15,000, P.A. CENTRAL LONDON

BUPA is the undisputed leader in the provision of private medical insurance within the UK, with a 75% share of this growing market and interests in the provision of health care facilities. BUPA is a non profit making organisation ploughing any trading surplus back into the business, to provide even better facilities for its subscribers.

BUPA have developed a plan, Project Eighty Three, which over the next eighteen months will provide the resources to take BUPA to the very forefront of commercial systems.

The plan encompasses systems maintenance and enhancements, technical support, quality assurance, and significant new systems development. It shows a level of planning and of financial commitment rarely seen in Data Processing. It will provide both User departments and BUPA's subscribers with an all-round service of the highest possible calibre.

BUPA run a number of applications utilising minis and large IBM and IBM compatible mainframes. A range of software is employed, including OS/VS1, VM, CMS, CICS, Adabas, Librarian and VSAM. Programming languages used include PL1, COBOL, Assembler and Natural.

The range of applications being supported, under development and at feasibility stage, will be outlined in the BUPA Company Profile which will be sent to responding applicants.

Vacancies currently exist for ANALYSTS and PROGRAMMERS, at various levels of seniority, to join one of a number of project teams.

A variety of career paths are open within BUPA, and Project Eighty Three has the facility for appointees to gain experience in more than one project area to help career development.

The benefits package provided by BUPA is excellent, and includes mortgage subsidy, season ticket loans, subsidised restaurant and of course... free BUPA!

Full details on BUPA and on the positions themselves have been prepared, and will be sent, with an application form, to all responding applicants. To receive these details please either telephone the number below

or return the coupon. Initial interviews can be conducted up to 8.00pm Monday to Friday, or on Saturday mornings, by appointment

Please send an Application Form and Company Profile

Surname _____

First name _____

Full address _____

Position applied for _____

Home tel. _____

Work tel. _____

RIB MAIN CONTRACT SERVICES LTD.

FREEPOST 24, London W1E 5UZ. Telephone 01-580 0400 (24 hour answerphone)

PROJECT EIGHTY THREE

BUPA

Add a New Dimension to your Career...

...in Johannesburg S.A.

Technical
Software Support
Olivetti B.C.S. range

Package c R20,000
+ Benefits

Renewable Contract
or Permanent Post

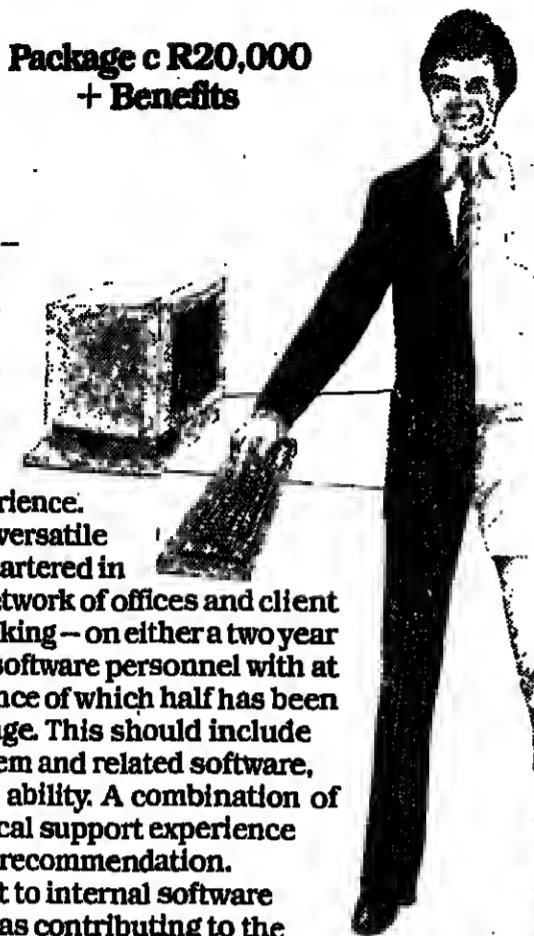
Return Air Fares &
Relocation Package

In South Africa, we work hard – our Country's growth over the last 90 years bears testimony to that – and we enjoy life. Who wouldn't with our fantastic climate and recreational facilities. Consequently, a contract or career in South Africa can be a fascinating and rewarding experience.

We are a very successful and versatile International Company, headquartered in Johannesburg with a diverse network of offices and client sites throughout S.A. We are seeking – on either a two year contract or permanent basis – software personnel with at least 4 years overall DP experience of which half has been gained on the Olivetti B.C.S. range. This should include knowledge of its operating system and related software, as well as BASIC programming ability. A combination of applications knowledge, technical support experience and user consultation is a high recommendation.

The position involves support to internal software personnel, user liaison, as well as contributing to the

Technical, Sales & Management Appointments



SCR International... bringing the world within your reach.

Specialist Computer Recruitment
International Limited

MIDLANDS & INTERNATIONAL
25-37 Great Charles Street,
Queensway, Birmingham B3 3JY
021-238 3761

HOLLAND
Willemsparkweg 92,
1071 H M, Amsterdam
010 3120-760947

BELGIUM
Avenue Louise 327,
Belle 4, 1050 Brussels
010 322-840 7161/71

SOUTH
James House, 40 James Street,
London W1M 6HS
01-935 0671/488 0461

NORTH
Blackfriars House, The Pensions
Manchester M3 2JA
061-633 0427

**Network Controller
Central Lancashire
Salary to £9,500
+ lease car & relocation**

Our client, whose turnover is in excess of £100 million, markets a unique service to industry and are an extremely successful organisation due in part to computerisation. Currently the configuration is IBM 3031 AP, 4341 with minis and micros, and they offer services to both users and customers alike. The development team is now poised to undertake significant enhancements to these services both in hardware and software terms.

To assist in these developments the company wish to recruit a communications specialist who has experience of a large IBM mainframe environment, ideally with exposure to VTAM and MCP. Additionally, knowledge of some of the following facilities would be beneficial: x21, x25, packet switching, data scope and data stream.

You will be involved in the installation of a national communications network and local area networks using a range of microcomputers, within a very

sophisticated computing environment. In addition to a good salary and excellent working conditions our client offers the benefits you would expect of a progressive organisation. For example, early 1983 review, subsidised restaurant, contributory pension scheme and life assurance. The relocation package is excellent, the location is in a very attractive part of Lancashire and is well serviced by the motorway network.

For further details of this excellent position please contact Peter Brown on 061-491 1866 (during office hours) or 061-724 8376 (evenings/weekends) or write to him at Computer People North, Sovereign House, Stockport Road, Cheadle, Cheshire SK8 2EA.

Computer
People
North

Programmers to Project Leaders

£8,000 – £13,500

A challenging career with one of the UK's largest independent software houses. If you have any of the following skills, get in touch now.

IBM COBOL PL/I DL/I ADABAS CICS

ICL COBOL IDMS TP TPS

HONEYWELL COBOL DMIV TDS

Marcol offers a progressive career path, equity participation and a full range of first class benefits.

Take a share in our success!

Ring or write now to Virginia McGrae
Marcol Computer Services Ltd.
60 Queen's Gardens, London W2 3AF.
Telephone: 01-402 9355 (24 hour service)

MARELL
Communication and Information Systems

JOHANNESBURG
TELEGRAMS
002 56169
002 56168
002 56167

0273 202316

Urgent 1 year Quality Contracts

LEARN SYSTEM 38
LONG-TERM CONTRACTS
EUROPEAN TRAVEL

IBM PL/I IMS/DOS/DB

IBM PL/I IMS/DB

IBM DL1 CICS
COBOL

IBM OS or MVS
COBOL

NUMEROUS OTHER VACANCIES – TOO MANY TO MENTION! RING NOW!

System 34 RPG II programmers or analysts/programmers now is your chance! Our client seeks good DP professionals with solid System 34 RPG II experience and banking systems exposure to help in their worldwide development plans. We are particularly interested to meet individuals still within permanent employment but who are looking to satisfy both their career and financial aspirations and learn System 38 whilst on contract.

Interested? – then telephone Stephen R. Peerless on 0273 202316 or 0272 55729 (weekends/evenings).

Four programmers required for a system to be installed in 20 countries worldwide, communicating via existing data transmission networks and to control all aspects of accounting between the related companies. Contracts will be for 12 months starting in September and –

Two programmers required to work on the development of a sophisticated plant part logistics system with a start date as soon as possible.

Telephone Barry Shoebridge on 0273 202316 or 0273 309069 (weekends/evenings).

Ten programmers/senior programmers are required to develop a variety of systems on an IBM 4341 under MVS. Experience in DOS/VSE is acceptable but with either operating system a good knowledge of DL1/CICS is essential. Our client has exceptional offices based in Central Berkshire and is within easy commuting distance from London by road or train.

Ten programmer and four senior programming positions are available with two of our clients who are developing financial systems. Based in the South and Central London, they both offer superb working conditions. An advantage would be a knowledge of IMS/DL1, MARK IV or UNIPAY.

Telephone Dennis Linscott on 0273 202316 or 01-462 8869 (weekends/evenings).

BEDFORDSHIRE SOFTWARE SPECIALISTS

A major communications company requires specialists for the development of communications systems. Interested candidates should have experience within the following areas: Package Switches, Private Networks, X25, Local Area Networks, Military Projects, Operating Systems, Languages/Compilers and Device Drivers. Ref. CW 26/1

ESSEX SOFTWARE ENGINEERS

Our client is involved in the design of fully integrated engineering and Software Systems in their Defence and Communications Industry. They require immediate Software Programmer with a minimum of 2 years' experience including Assembler in a Mini/Micro environment. The company offers excellent career development within Real Time Systems together with a generous relocation package if required. Ref. CW 26/2

SCIENTIFIC PROGRAMMERS LONDON

An expanding division of a well-known Software House have immediate openings for the following projects: Real Time Simulation, Process Control, CAD, Command + Control and Mathematical Modelling. Successful candidates should have one or more of the following: Minimum 2 years' Software Programming, PDP11, RSX11M, VAX 780, ASSEMBLER, CORAL 66, RTL2 and FORTRAN. Ref. CW 26/3

SWITZERLAND

GERMAN-SPEAKING SOFTWARE ENGINEERS

A major communications company require additional German-speaking programmers to develop new communications Software. Candidates should have a minimum of 2 years' Real Time experience in this field. Ref. CW 10/4

HARDWARE ENGINEER BEDFORDSHIRE

Satellite communications is our client's speciality. They currently wish to employ a Hardware Engineer with a minimum of 3 years' experience in industry. A degree background is necessary plus some involvement in Software Hardware experience of TTL and ECL design on micros would be ideal. Ref. CW 26/6

ASHFORD SOFTWARE ENGINEERS

A company dedicated to Communications Systems is currently seeking engineers with a variety of the following:

- IBM/ICL PROTOCOLS
- X25
- DEC/RSX11/VAX
- DEFENCE
- CORAL
- INTEL 8086
- NETWORKS
- PROCESS CONTROL
- EMULATORS

Ref. CW 26/6

SYSTEMS ENGINEERS IN EUROPE - HOLLAND

One of the UK's largest Systems Consultancy and Implementation organisations offers an exceptional combination of involvement, experience and commitment in a number of specialised application areas.

They are looking for System Engineers to undertake an initial assignment in Europe working at the design stage of a Real Time project.

Candidates should have:

- A minimum of 6 years' experience
- Specialised knowledge of Fire Control Systems
- Guidance Systems
- Radar/Sonar
- Navigation or EW Systems

Ref. CW 26/7

SYSTEMS CONSULTANTS LONDON

Our client, a leader of International Business Communications require additional Systems Consultants to work from their London base with occasional overseas travel possible.

Systems Consultants will be involved in System Design for a variety of industries using new technology involving video communications on Real Time Systems.

Candidates should have experience of DEC, VMS or RSX11 ability to design Software for a wide range of terminals and networks. Ref. CW 26/8

SOFTWARE ENGINEERS MIDDLESEX

Our client applies traditional engineering disciplines to Software Design and Production. Their applications include Weapons Guidance, Satellite Communications, Mathematical Modelling and System Simulation.

Candidates with compatible experience to the above applications will gain a remarkable breadth and depth of knowledge, not just on a theoretical basis but through practical experience, and close involvement in some of the most advanced Real Time Systems anywhere. Ref. CW 26/9

COMMAND & CONTROL LONDON

One of the largest international Software houses with their headquarters in London have a requirement for Software Designers with a minimum of 1 year's experience in Real Time Systems Design, candidates should have a degree plus experience in one or more of the following:

- Defence Systems
- CORAL
- Mascot
- VAX
- INTEL 8086

Ref. CW 26/10

All the above appointments involve permanent positions and carry a wide range of salary and conditions dependent on location and experience. In the first instance please send us a copy of your CV (alternatively telephone for an application form) so we may discuss your application in confidence with our client on your behalf.

DATAMATICS
RECRUITMENT SERVICES
01-399 9183

Datamatics, Freepost, Surbiton, Surrey KT6 5BR

EXCELLENT CONTRACTING OPPORTUNITIES

Our immediate domestic and international consulting needs are detailed below. If you are of a professional disposition, skilled and dedicated, and wish to join our permanent or contract staff, please contact us in respect of these and future opportunities.

INTERNATIONAL

COBOL, OS, TSO/SPF	Programmer/Analyst	USA
COBOL, IMS/DB	Programmer/Analyst	USA
COBOL, IBM 4341,	Senior Analyst	USA
DOS/VSE		
WANG	Analyst/Programmer	USA
International Banking	Analyst,	
exp. and/or MIOAS;	Programmer/	
HPG II S/34 and/or	Analysis/	
RPG III, S/38	Programmers	
UK	Technical Designer,	LONDON;
COBOL, CICS, DL/1	Project Leader,	Hems
	Programmers	Counties
COBOL, IMS DB/DC	Senior Programmer	LONDON;
	Programmers/Analysts	Hems
COBOL, ICL 2000, VME/D,	All Levels	Counties
IDMS DMS or TPMS a	Senior Programmers	LONDON
bonus Datapoint		Hems
COBOL, TSO/SPF	Programmers	LONDON
MARK IV	Analyst/Programmer	LONDON
COBOL, ASSEMBLER	Programmer/	LONDON
IBM 4300, DOS/VSE	Analyst	LONDON
DE/RPG, IBM 5280	Programmer/	LONDON
RPG III S/38 and/or	Analyst	LONDON
MAAPICS	Systems Analyst	Hems
		Counties

Resources Department
TANGENT COMPUTER SERVICES
102/108 South Street
Romford, Essex

Tel: Romford (0708) 750201
(24-hour answering service)



Trinidad and Tobago Telephone Company Limited

Suitably qualified candidates are urgently required in the following areas:

Telecommunications Engineers and Technicians

For Planning, Construction and Maintenance

- ★ SWITCHING
- ★ TRANSMISSION
- ★ OUTSIDE PLANT
- ★ POWER SYSTEMS
- ★ AIR CONDITIONING SYSTEMS

There are also vacancies for

Computer Personnel

On-line and Real-time Systems

SYSTEMS ANALYSTS
PROGRAMMER ANALYSTS
SYSTEMS PROGRAMMERS
PROGRAMMERS
Our company uses an IBM 4341 group 2 computer (VM/SP: DOS/VSE: DMS/CICS/VS: DL/1: ACF/NCP: ACF/VTAM COBOL, RPG, APL, FORTRAN)

Attractive Remuneration Package

Please write with full CURRICULUM VITAE to: The Trinidad and Tobago High Commission, Consular Section, 42 Belgrave Square, London SW1 by September 6th, 1982.

late applications will be accepted at: TRINIDAD AND TOBAGO TELEPHONE CO. LTD. (ATT. J. E. KASSIE), PO Box 917, 85 Abercromby Street, Port of Spain, TRINIDAD.

107001

IBM Computer Operators

Fluor (Great Britain) Limited is part of one of the world's most successful companies in the engineering and construction industry, with particular emphasis in the energy field.

Our European Data Centre is currently based on an IBM 4341-2 using MVS/JES-2, TSO, VSPC, IMS and NJE software. The associated network has RJE and interactive terminal links to our offices on the Continent and in the U.S.A.

The planned expansion of the Company's network requires the introduction of a 3 shift system. We, therefore, have vacancies for the following positions:

Senior Computer Operator

Candidates should be in their mid to late 20's with 3-4 years experience working in an IBM MVS/JES-2 environment, preferably in a supervisory role.

Computer Operator

Candidates should have at least 18 months operating experience of the above system.

Salaries will be negotiable according to age and experience, plus relevant shift allowance.

If you would enjoy the challenge and scope available within our Company, please send your c.v. with day time telephone number to the Personnel Officer, Fluor (Great Britain) Limited, Fluor House, Euston Square, P.O. Box 309, London, NW1 2DJ. Alternatively, telephone 01-388 4222 ext 4206, for an application form.

FLUOR (GREAT BRITAIN) LIMITED

PROGRAMMERS

IBM/COBOL/Insurance Banking

SENIOR PROGRAMMER

PL1/Oracle/CICS

SALES EXECUTIVES

Micro/Peripherals/Minis

ANALYST PROGRAMMERS

COBOL/IBM/HP/ICL ME28

SOFTWARE ENGINEERS

FERRANTI/ARGOS

HARDWARE DESIGN

SYSTEMS ANALYST & PROGRAMMERS

On-line exp/VMEB or K or George 3

SOFTWARE DESIGNERS

COBOL/PASCAL/L2

SYSTEMS PROGRAMMERS

Strong IBM environment preferred

ANALYST PROGRAMMERS

ICL 2958/Database/Fortran/Pascal

ANALYST PROGRAMMERS

Dec/DP/Weng/Bealc/Prime

SYSTEMS ADMINISTRATIVE

HP3000

SOFTWARE ENGINEERS

RAOAR/Military/ATE/CORAL/Mecot/Bates

PRINCIPAL CONSULTANTS

Commercial Software exp/Accounting qualifications

PROGRAMMERS

Database/Banking

PROJECT LEADERS/MANAGERS

PROGRAMMERS CAD/CAM

TECHNICAL SUPPORT

SENIOR PROGRAMMERS

COBOL/IMS

For the opportunity to hear about YOUR kind of job throughout the U.K. telephone:

to 10K
Northeast London/West Sussex
to £15K
Croydon/Beds/Berke

to £25K
London/Home Counties
to £10K
London/Essex/Sussex/Hants

to £12K
Berks/Essex/Surrey
to £12K
Home Counties
to £11K
Surrey/East Anglia/Bucks

to 13K
Sussex

to £12K
London
to £12K
London

to £12K
Berks/Bucks
to 15K
Berks.

to £14K
Berks/London
to £13.5K
London/Home Counties

to £12K
West Country/Essex
to £12K
UK WIDE

to £11K
Northeast/Bristol

to £11K
Northeast

to 15K
Berks.

to £14K
Berks/London
to £13.5K
London/Home Counties

to £12K
West Country/Essex
to £12K
UK WIDE

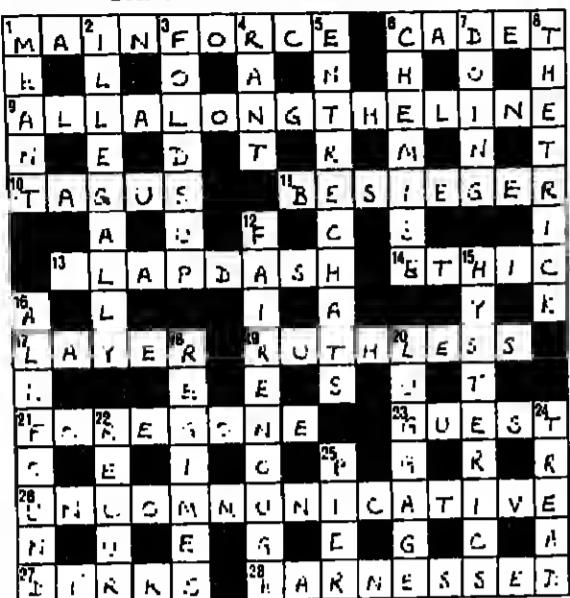
to £11K
Northeast/Bristol

to £11K
Northeast

38 - COMPUTER WEEKLY, August 26, 1982

CROSSWORD

Solution to Prize Crossword No 31



A MID-GLAMORGAN reader is our £10 winner this month - he or she is called J. R. Smith and lives at Bridgend, but gave no telephone number, so we can't tell you his or her first name or job. £5 goes to Derek Mungall, freelance programmer of Bradford, and to Larry Howard, senior analyst/programmer with British Telecom.

**NORTHERN REGIONAL HEALTH AUTHORITY
SOFTWARE SUPPORT
PROGRAMMER (£6684-£8147)**

The above vacancy is within a team of 4 specialist support staff who provide software and operational support to mainframe, mini and micro computer users in the Northern Region.

The Authority has installed an ICL 2986 running under George 3 and DME and longer term plans will probably include VME working.

Applicants must have a good working knowledge of George 3 together with 2 years Cobol experience and should be able to demonstrate the ability to provide the wide range of support that is required from members of the Software Section.

Application forms and job descriptions available from Regional Personnel Officer, Northern Regional Health Authority, Benfield Road, Newcastle upon Tyne NE6 4PY.

Closing date 10 September 1982.

EXCHANGE

Ambitious male programmer with 6 years contract Cobol experience
+ CPG (distinguish) Cobol Prog
+ 85% Joint Hons
+ 3 yrs' operating experience
+ 3 yrs' consultancy

FOR
Permanent mainframe programming
position with good career prospects.
Any location considered

TEL: 0846 3460
until 8th September

**LONDON BOROUGHS OF BRENT AND EALING
JOINT COMPUTING INSTALLATION**

SYSTEMS ANALYST
Based at Acton Town Hall

£25,522-£10,524 inclusive of London Weighting

To work as a member of a project team responsible for all accountancy systems. Ideally a minimum of two years' experience of Cobol or assembler required plus previous systems involvement. Consideration will be given to skilled programmers who wish to move towards systems analysis.

The installation has an IBM 3031, running under VM/ANSI DOS/VSE. Software includes CICS, DL/I, Easytrieve, On-Line Utilities, APL, etc.

In addition costs the Council offer 100% removal expenses, 60% removal and estate agent fees up to a maximum of £3200 and 10% loading allowances. A flexible 35-hour working week and interest-free loans for lesson tickets, 5 weeks annual leave.

Application forms available from the Personnel Section, Room A20, Town Hall Annex, Ealing, W5 2SY. Tel: 01-578 2424, Ext. 3380, out of hours answerphone 01-840 1985.

Please quote reference 97 FD.

Closing date: 10-8-82.

Ealing
London Borough

**EXPERIENCED PROGRAMMERS**

ENGLISH CLAYS LOVING POCHIN & CO. LTD., the major operating company of the English China Clays Group, wishes to recruit experienced Programmers for its expanding Data Processing Section located at the Group's Head Office at St. Austell, Cornwall.

The computer system includes a 3 ICL 2986 (with DME) and 3 ICL ME29s (with TME-TP). There are a growing number of computer terminals and micro computers used within the Company.

Candidates must have had a minimum of 3 years' proven programming experience, preferably to include working with ICL machines and using COBOL.

There are opportunities for those who demonstrate the ability to develop towards systems analysis.

Conditions of employment include contributory Pension, non-contributory Life Assurance and Profit-Sharing Schemes and 5 weeks' annual holiday; assistance will be given with re-location expenses.

Applications in writing, quoting Reference 315 to:

The Personnel Manager
John Keay House
St Austell
Cornwall. (0686) 10686

HUDDERSFIELD POLYTECHNIC

Department of Computer Studies and Mathematics

RESEARCH ASSISTANT

Salary: Researcher 'A' Scale £4680-£5618

Applicants are invited for a three-year appointment, supported by SERC, to work on a project concerned with the use of dialogue for the man-machine interface.

Candidate should have a good honours degree in computing and preference will be given to those with experience of UNIX and PASCAL. Closing date for applications is 8 September, 1982.

Further details and application forms are available from the Personnel Office, The Polytechnic, Ousegate, Huddersfield HD1 3DH. Tel: 0484 2288 ext 224.

(0686) 10686

DATABASE SYSTEMS DESIGNER
Circa: £10600

Due to expansion Barclays Bank wish to recruit an experienced person to participate in the design, development, implementation and support of DB/DC COBOL applications.

The successful applicant will have a minimum of 3 years working in Database Administration department with practical experience of system design and analysis together with essential personal qualities to communicate with and support our various project teams.

Applicants should, ideally, be educated to degree level or equivalent and must be self-motivating and experienced in the following areas:

Large/Complex Database Design, MPS/ITS, Data Dictionary, IMS Utilities, COBOL, VSAM, TSO/SPF, MVS/JCL.

Barclays Bank offers the successful candidate an opportunity to remain at the forefront of IMS technology within the field of Continuous Operation, Fast path and database recovery procedures.

The IMS systems will run under MVS/XA on IBM 3081 Machines.

The normal fringe benefits associated with working for a major Bank, apply, including a non-contributory pension scheme, subsidised restaurant, excellent sports and social facilities and a staff profit-sharing scheme.

Application forms may be obtained from:

Ken Colebrook, Manager (Personnel),
Barclays Bank PLC,
Management Services Department,
Radbroke Hall, Nr Knutsford,
Cheshire. WA16 9EU.

or Telephone Knutsford (0565) 3888 Extensions 2743/2745

**Contractors**

Resulting from our continuous marketing campaign we will always have contracts available that you are unaware of.

The chances are that we will know of a job to suit you in your area - if not now, then certainly in the near future.

Give yourself the opportunity to consider these contracts.

Contact Roger Radford or Richard Jones on 021-643 4700. Telex: 337045.

(0686) 10686

Compuhire

Temple House,
43-48 New Street, Birmingham B2 4JL.
Tel: 021-643 4700 Telex: 337045
Licensed by the D.O.L. as an Employment Business
(St137)

**GENERAL
MANAGER/DIRECTOR
DESIGNATE
CONTRACT AGENCY**

The continued growth of our client has created an outstanding opportunity for a person with proven contract and managerial experience.

The agency is in the top ten in the U.K. The job is to lead the existing small but enthusiastic sales team to even bigger and better achievements.

Salary and benefits are excellent. Prospects are brilliant. Incentive and option schemes are in operation.

Send details of résumé, contract sales record and management experience to: Box No. 1212.

Strict confidentiality assured.

Programmer

Required to undertake post-design responsibility for the company's firmware and diagnostic programs.

Duties will include:

- * Formation and implementation of operational procedures for the controlled release and update of programs.
- * Maintenance of firmware and diagnostic programs.
- * Advising on improvements in support methods and associated programs.

Required to strengthen the existing group undertaking post-design responsibility for the hardware of the company products.

Duties will include:

- * Identification and rectification of design faults.
- * Liaison with internal departments on hardware support methods.
- * Evaluation of new peripheral units.
- * Liaison with vendor companies.

Ideally, applicants should have at least 3 years' experience in the computer industry or a related field with a relevant degree or HNC qualification.

These are senior positions within a small team, providing excellent career prospects, with an attractive remuneration package.

Relocation assistance will be provided where appropriate.

Please write with full C.V. to Rob Wilson, Personnel Officer,

Rediffusion Computers Limited,

Kelvin Way, Crawley, West Sussex RH10 2LY.

Telephone Crawley (0283) 31211 ext. 278.

REDFIFFUSION
Computers
A Member of the Rediffusion Group of Companies

FOR
CLASSIFIED
ADVERTISING USE

DIRECT
LINE
01-661 0121

(0686) 10686

**VERY URGENT
CONTRACTS**

BURROUGHS 36800 COBOL	Hants	ASAP 45
ICL ME29 IDMS TME	North	SEPT 101
ICL 2900 TPMS IDMS CDBOL	Essex	ASAP 102
IBM CDBOL OS	Hants	ASAP 28
ICL VME/B SUPPORT	Europe	ASAP 103
MICROS	(Various Sites)	ASAP
ICL CIS COBOL DR	Barks	ASAP 104
ICL IDMS VME	Barks	ASAP 105
IBM COBOLIMS/ADF	South London	ASAP 21
ICL 2900 COBOL IDMS	Wilt	ASAP 108
ICL 2900 DESIGNER	(Various Sites)	ASAP 107
INSURANCE ANALYSTS	Hants	ASAP 46
IBM SYS. 34 RPGII	S. Midlands	ASAP 43
ICL ANALYST/PRDG. IDMS	London	ASAP 108
ICL IDMS SUPPORT VMEB	Kuwait	ASAP 109
IBM 4300 (PL/I) TOTAL	Leica	ASAP 30
ICL 2958 VMEB	Dublin	ASAP 111
DEC or VAX MUMPS	Hants/Hants	ASAP 40
HONEYWELL 64 COBOL IDS TDS	Holland	ASAP 44
ICL TEAM LEADER STRDNG IDMS	Staffs.	ASAP 505

Further details on request

Please telephone Joan, Roger, Caroline or James on Amersham (0240) 22201 or send your c.v. to Plymouth House, London Road, Amersham, Bucks, HP7 0HE.

ALL REPIES QUALIFY FOR OUR MINICOMPUTER DRAW

**H
PROGRAMMING
& SYSTEMS LTD**

ICL G3 Tech. Support Programmer
CITY - £9,500 + Benefits

To evaluate, test, tune and implement new systems software and utilities. This wide-ranging position will involve advising on use of all systems software, security, data administration and communications. You will require a thorough knowledge of GET/GE 3 and communications concepts. Conversion to VME is expected next year.

Systems Analyst
CITY - £9,500 NEG. + Benefits

To play a major part in the analysis and design of a complex integrated on-line system which will incorporate a Database, Networking and Distributed Processing. You will have around 2 years' ICL COBOL experience and an understanding of T.P. Systems.

Conditions are excellent including 32½-hour flexitime week, 22 days' holidays and staff restaurant. After qualifying period staff also receive: Annual profit-sharing bonus, mortgage subsidy, Non-contributory pension and free life assurance.

To FIND OUT MORE about these vacancies in strict confidence please contact JASMINE DAINES.

357 Euston Road London NW1 3RL
01-388 0111 (24 hours) Licence No 52140
FORWARD RECRUITMENT CONTRACT SUPPORT DATA PREPARED

Experienced Programmer
£8663-£9108 p.a. inclusive Grade S.O.1
(pay award pending)

We need an experienced programmer in the Borough Treasurer's Department to operate in an environment serving a wide range of professional disciplines and related activities, using our ICL 2920 model 48 computer.

At Hartsham, we have an organisation which provides a scope and commitment in a stimulating, busy and friendly atmosphere.

The successful applicant will be expected to have up to 4 years' experience using COBOL, knowledge of T.P. and ad-hoc Report packages would be desirable. Previous experience in Local Government is not essential.

We are situated in a pleasant part of South Hartsham with good road and rail links to London and the North.

We have modern offices with a Staff Cafeteria and provide generous relocation allowances in approved cases.

For further information regarding this post please contact the Computer Manager on 01-207 2277, ext. 406 or 408.

For an application form and Job Description please contact the Personnel Office, Civic Offices, Evesham Way, Borehamwood. Telephone 01-207 2277, ext. 406 or 408.

Closing date: 1st September, 1982.

HERTSMERE BOROUGH COUNCIL (0299)

TAUNTON DEANE BOROUGH COUNCIL
FOR
CLASSIFIED
ADVERTISING USE
DIRECT LINE
01-661 0121

**UNIVERSITY OF BRISTOL
LECTURER IN COMPUTER SCIENCE**

Applications are invited for a Lecturer in Computer Science, within the Department of Mathematics to commence on 1st January, 1983, or as soon as possible. Further particulars may be obtained from the Registrar, Senate House, Tyndall Avenue, Bristol, BS8 1TW, to whom applications should be sent by 17th September, 1982. Please quote reference E.B. (0624)